

**Reservation for Women in Karnataka Gram Panchayats: The Implications of
Non-Random Reservation and the Effect of Women Leaders**

Janhavi Nilekani

Economics Senior Essay

Yale College 2010

Acknowledgements: I am grateful to Professors T.N. Srinivasan and Thad Dunning of Yale University for guidance and support throughout this project. A 2008 Democracy and Development Fellowship from the Whitney and Betty MacMillan Center at Yale University enabled me to collect some of the data on government performance. Reservation data collected by Dunning and Nilekani (2009) was extremely helpful. I thank U. A. Vasanth Rao and the Chief Decentralization Analysis Cell of the Gram Swaraj Project for providing fiscal data.

Table of Contents:

Abstract

- 1. Introduction**
 - 1.1. Karnataka's Panchayati Raj**
- 2. Theoretical Background**
 - 2.1. Theoretical Support and Criticisms of Political Reservation for Women**
 - 2.2. The Impact of Reservation for Women and Minorities in Indian Panchayats**
- 3. Methodological Critique: Non-random Reservation in Indian States.**
 - 3.1. Introduction**
 - 3.2. Evidence Against Reservation Being Random in All Indian States**
 - 3.3. Data Collection**
 - 3.4. The Karnataka Panchayati Raj Reservation Process**
 - 3.5. Implications of Karnataka's Reservation Process**
 - 3.6. Conclusion: Misestimation of the Effect of Reservation in Previous Research**
- 4. Random Assignment at the Margin of Reservation**
 - 4.1. Data Collection**
 - 4.2. Empirical Design**
 - 4.3. Results and Discussion**
- 5. Conclusion**

Works Cited

Appendix A: Further Details on the Research Design

Appendix B: Rural Development and Panchayati Raj Data Independent T-test Results

Appendix C: Gram Swaraj Project Fiscal Data Independent T-test Results

Abstract: Do women leaders of Indian village councils govern differently than their male counterparts? The literature finds that the election of women presidents through electoral quotas shifts public goods provision towards female preferences and improves overall governance. This finding is based on the assumption that reservation for women is random. Confounding factors could overturn the finding if reservation were non-random, which, as I show, is indeed the case in Karnataka state. To overcome this challenge of non-randomization, I construct a group of 1810 village councils in the state of Karnataka in which reservation was random, though not by design. My construction exploits the fact that reservation of village council presidencies is based on the number of seats reserved for women in individual village councils. I compare the village councils with presidencies reserved for women to councils without such reservation on a variety of indicators. I find few significant differences between women presidents and male presidents on any measure of governance. The impact of reservation on governance may thus be weaker than suggested by previous research.

1. Introduction:

Gender discrimination and inequality remains pervasive in Indian society. Domestic violence against women, female feticide and infanticide, wage disparities, sexual harassment and abuse, nutritional discrimination, and low female literacy rates are widely prevalent. The Indian government has enacted numerous measures to promote women's empowerment, including laws to protect women from domestic violence, to ban dowry, to ensure that men and women receive equal pay for equal work, and numerous schemes that promote women's development. Most recently, the Women's Reservation Bill was passed by the upper house of the Parliament of India on March 9th, 2010, despite significant political resistance. This bill requires that one third of all seats in state legislatures and the lower house of Parliament must be reserved for female candidates.

As part of the effort to eradicate gender inequality, when the 73rd Amendment to the Indian Constitution instituted the *Panchayati Raj* system of decentralized local self government in rural India in 1993, it required reservation for women, that is, electoral quotas. In a seat reserved for women, only female candidates can contest the election. The 73rd Amendment mandates that at least 33% of the seats in every local government council, known as the gram panchayat, be reserved for women. Moreover, at least 33% of the gram panchayat presidencies in every state must also be reserved for women.

A large body of research exists on the effect that reservation in Indian panchayats has on governance. The literature suggests that reserving gram panchayat presidencies for women shifts policy towards women's preferences. In this paper, I argue that previous research may have misestimated the impact of reservation by using the flawed assumption that reservation for women presidents is randomly assigned in all Indian states. In fact, in at least some states reservation is assigned based on specific criteria that could affect panchayat outcomes. Prior literature has thus ignored the potential confounding factors arising from non-random reservation. I show that in Karnataka state, non-random reservation does indeed cause systematic differences between reserved and unreserved panchayats.

Reservation is not randomly assigned in Karnataka, and hence one cannot study the impact of reservation for women leaders by directly comparing panchayats reserved or not reserved for women presidents. To control for unobserved differences caused by non-random reservation, in this study I utilize the fact that reservation in Karnataka is randomly assigned for a subset of gram panchayats. I identify which gram panchayats formed this subset in the period 2005-2007. I then test for the effects of reservation on a variety of outcome indicators from 2005-2007, such as tax collection, spending on different schemes, and investment in drinking water infrastructure. Ultimately, I find that reservation for women presidents has extremely weak effects on the outcomes used in this study. Thus, this research

contradicts most of the previous literature showing significant positive effects of reservation for women panchayat presidents.

In the following sections, I describe the structure of Karnataka's panchayat system, and then provide theoretical advantages and disadvantages of political reservation for women. I describe the existing research on the impact women's reservation has had in Indian gram panchayats. In Section 3, I offer evidence that, contrary to the claims of prior literature, reservation for women panchayat presidents is not randomly assigned in all Indian states, and suggest that existing estimates of the impact of women's reservation may not be fully accurate. In Section 4, I identify a subset of panchayats in Karnataka for which reservation was randomly assigned. I use this subset to study the impact of reservation on a variety of indicators and find extremely weak effects.

1.1. Karnataka's Panchayati Raj:

In India's local government structure the lowest tier is the *gram panchayat*. In Karnataka, the gram panchayat covers about 6 to 12 villages. An intermediate *taluk panchayat* government has jurisdiction over a taluk (sub-district), and then the *zilla panchayat* governs at the district level. Government representatives are chosen through direct elections every five years. Certain seats in the each of the three tiers are reserved for women, Scheduled Castes and Scheduled Tribes (SCs/STs). The Scheduled Castes and Tribes are those castes and tribes that are listed in the Constitution as the most disadvantaged. In Karnataka, seats are also reserved for Backward Classes, a category of needy groups that do not qualify as SC or ST.

Apart from the reservation of seats, within every taluk, gram panchayat presidencies are reserved for SC/STs, women, and other groups. Furthermore, a proportion of taluk and zilla panchayat presidencies are also reserved for disadvantaged groups. Local governments are responsible for roads, sanitation, drinking water facilities, selecting beneficiaries for poverty alleviation schemes, implementing national job guarantee schemes, and other social services.

Many states, including Karnataka, have instituted a bi-yearly '*gram sabha*' meeting of the villagers. The '*gram sabha*' meetings of the electorate ensure the gram panchayat adhyaksha (headman or headwoman) remains accountable to the voters. The limited existing research indicates that these institutions perform their function adequately. Ghatak and Ghatak, in a study of West Bengal villages, found that while participation in the village constituency meeting was low, villagers asked provoking questions, offered liberal criticism, and engaged in lively debate about services provided by the panchayat (1999). In an interview, Hassan Ashraf, the then-Director of Panchayati Raj in Karnataka, explained that the gram sabha is the platform for citizens to voice concerns about any activity of the gram panchayat, including the choice of beneficiaries for poverty relief (Ashraf, 2008).

Of the three tiers, only the gram panchayat has taxation powers. In practice, however, very little of its revenue comes from taxation. The majority of funds are received as grants, from the Government of India as well as the State of Karnataka. There are 'tied' funds that are ear-marked for particular activities, as well as 'untied' funds that can be spent at the discretion of the panchayat.

Multiple studies have shown that the local panchayat governments and panchayat presidents have a significant impact on governance in villages. For instance, Chattopadhyay and Duflo (2004) find that panchayats that were reserved for women leaders are more likely to invest in local public goods preferred by women. Clearly, the gram panchayat and its president do have some discretion over spending. The Karnataka government passed measures a few years ago to ensure that every gram panchayat has at least Rs. 5 lakhs (about \$12,500, a relatively large amount) in unrestricted grants-resources over which they have full control, separate from the earmarked funds they receive. This fiscal power alone ensures that the gram panchayat is a significant body in Karnataka.

2. Theoretical Background

2.1. Theoretical Support and Criticisms of Political Reservation for Women

According to a 2007 UNICEF report, in July 2006, women accounted for less than 17% of all parliament members worldwide. The status is worse at the top levels of government. In January 2005, only 14.3% of government ministers were women (UNICEF 2007). In 2000, of 179 nations, only 9 had a female head of state (Norris and Inglehart 2001). Numerous countries have taken proactive measures to promote participation of women in public life. In 2001, more than 30 countries had instituted quotas for women in parliaments (Duflo, 2005). In India, women are underrepresented in the legislature, and there have been several failed attempts to pass a Women's Reservation Bill for Parliament. On March 9th, 2010, the bill was finally passed by the upper house, but it has yet to pass in the lower house and at least fifteen state legislatures before it becomes law. However, there is extensive reservation for women at the lower levels, including the gram panchayats.

Those favoring women's reservation point to its several features. Firstly, ensuring the political representation of all groups, especially the disadvantaged groups in society, is itself of intrinsic value. Because the preferences of different groups in society diverge, it is important to make certain that such differences are taken into account by ensuring that each group has a voice in policy decisions. Reservation is advocated by its supporters because they believe it is the only or the most effective way of achieving socially desirable objectives of representation of all legitimate groups that would not otherwise be represented.

Secondly, enhancing political representation of women through reservation is one mechanism of promoting women's rights and women's development. Thus reservation has an instrumental value. In general, personal characteristics of a legislator can extensively influence the political decisions he or she makes. Ebonya Washington writes that the "literature has established that political party, constituent preferences and a legislator's personal preferences and/or characteristics are all significant predictors of a legislator's voting pattern. Personal preferences or characteristics are particularly important in

explaining voting on moral issues". Washington even finds that in the USA, "each daughter increases a congress person's propensity to vote liberally, particularly on reproductive rights issues" (Washington, 2008). As America does not experience gender-based feticide, for American congresspersons the presence of a daughter rather than a son is random. This natural experiment indicates how strongly personal factors and the identity of the politician can affect decision making. According to UNICEF, women legislators are far more likely to support policies that promote the interests of women and children. This is true in both developed and developing countries. Moreover, their influence changes priorities of male legislators and increases general interest in women's issues (UNICEF 2007). Thus, if reservation increases women's access to decision-making, it can lead to policies that favor women and children.

However, even if political participation of disadvantaged groups has intrinsic value, and even if the instrument of reservation improves outcomes for the disadvantaged, it may lead to worse governance overall. There are many reasons to believe that reservation could have little positive or even a negative impact on the quality of governance. For example, a smaller pool of candidates may reduce the average ability of the elected leader. Disadvantaged groups generally have less education and experience. Moreover, as Duflo writes, in the context of Indian panchayats, reservation for women, SCs, and STs is rotating, and thus many of the reserved leaders will not be reelected or even re-nominated. They are 'lame ducks' as they have very small chances of winning in the next general election. Even male upper-caste leaders are often lame ducks, as they cannot be reelected if the presidency is reserved for a woman or lower-caste individual in the following period (Duflo, 2005). If poor-quality reserved leaders perform worse overall, for instance by providing fewer public goods, then even if the reserved group is relatively favored their net benefit could be negative.

In panchayats, even if lower-caste and women leaders are as competent as their male upper-caste counterparts, elite citizens might not accept their leadership. Particularly, male or upper-caste gram panchayat members may not accept the authority of the female or lower-caste president, and the effectiveness of the panchayat might be compromised, leading to below-average performance by reserved panchayats. It is often claimed throughout the panchayati and administrative establishment, and occasionally in the media, that women are simply a proxy for their husbands, or that when a lower-caste person is the reserved leader, an upper-caste elite has true authority. In my interviews (Ashraf 2008, Raghunandan 2008), for instance, I was told of cases where the president is of a lower caste because of de jure reservation and the upper-caste vice-president has de facto complete control. If such cases are widespread, de jure reservation may have a negligible impact. In both reserved and unreserved panchayats, the preferences of the upper caste male elite will be implemented.

To summarize, political representation of women is in itself intrinsically valuable as it is an important aspect of women's empowerment. Moreover, it can have numerous indirect benefits if decision-making shifts in favor of women. However, since trying to achieve representation through the instrument of reservation can have negative impacts, a priori it is difficult to predict the net effect of reservation on governance. In the following section, I highlight the empirical evidence on the actual impact of reservation in India.

2.2 The Impact of Reservation for Women and Minorities in Indian Panchayats:

The evidence on the impact of reservation for lower castes is largely but not entirely positive. Rohini Pande (2003) found that in the state legislative assemblies, reservation increased transfers to groups that benefitted from reservation. Besley, Pande, Rahman, and Rao, whose study also included Karnataka state, found that reservation of the head of the panchayat for SC/ST individuals augmented the chance that an SC/ST household will have access to toilets, water, and other facilities (Besley et al.,

2004). Prakash and Chin used data from 16 states over the period 1960-1992, and found that increasing the proportion of seats for STs reduces poverty while increasing the proportion for SCs does not. Reservation for STs has a greater impact on rural poverty than urban poverty (Prakash and Chin, 2009). Bardhan, Mookherjee, and Torrado, on the other hand, found that reservation for SC/ST candidates improves targeting for some schemes, but not others, and concluded that “the net effect of the reservations appears to have worsened targeting to SC/ST and landless households” (2005).

The bulk of the research on women’s reservation in Indian panchayats shows large, positive effects. In a seminal paper, Chattopadhyay and Duflo (2004) showed that when the position of panchayat president was randomly reserved for a woman in West Bengal and Rajasthan states, numerous outcomes for women improved. Female participation in the gram sabha increased significantly and women were more likely to have made a complaint or request to the GP president. The authors utilized formal requests made by men and women to the GP president to determine female public goods preferences, and found that women were most concerned about drinking water, roads, and welfare programs. This is understandable as women are primarily in charge of providing drinking water, are employed to build roads, and are the main beneficiaries of welfare schemes. Chattopadhyay and Duflo found that in both West Bengal and Rajasthan, there is more investment in drinking water infrastructure when the president is a woman. In West Bengal, but not Rajasthan, roads were better under women presidents. Thus, policy does shift towards female preferences under reserved presidents. After analyzing the formal complaints made by citizens, the researchers concluded that “Individual women are... not... more responsive to the needs of women and men in their communities. Rather, it is because their own preferences are more aligned to the preferences of women that they end up serving them better” (Chattopadhyay and Duflo 2004).

Munshi and Rosenzweig find that when the effects of caste are accounted for, women are more competent, and procure more resources for the constituencies, even though they have less education and experience (Munshi and Rosenzweig 2008). In an interesting finding about bias, Duflo and Topalova combined data on the quality of public goods with information on citizen satisfaction about panchayat performance. The authors utilized survey data from several states and the random reservation of presidencies for women. They found that in comparison to unreserved gram panchayats, gram panchayats reserved for women leaders had more public goods, of at least equal quality. In these reserved panchayats, people were less likely to pay bribes. Yet, people were *less* satisfied with the public goods provided by the women leaders (Duflo and Topalova, 2004).

Subsequently, Beaman, Chattopadhyay, Duflo, Pande, and Topalova conducted experiments on perceptions of women leaders in West Bengal. They found that “the evidence suggests that women leaders provide more public goods, of equal quality, at a lower effective price”. However, villagers, particularly men, are prejudiced against female leaders, especially when the GP has never been reserved for a woman. Their experiments included Implicit Association Tests, reactions to the same speech or vignette delivered by a male or a female, as well as surveys. They utilized the random reservation of seats for women in West Bengal to understand whether exposure to female leadership affects these prejudices. In villages that had never been reserved, men were more likely to associate male leaders as “good” and they thought female leaders were less effective. The authors found that exposure to a woman leader does not affect survey responses or the implicit dislike of women leaders found in their Implicit Association tests. However, after reservation, men were less likely to associate men with leadership activities and women with domestic tasks. Thus “reservation-induced exposure lowered the strength of the stereotype linking men with leadership activities”. Importantly, after reservation, hypothetical male and female leaders were considered equally effective by male villagers. In GPs that had been reserved a second time, ratings of the actual female presidents were no worse than ratings of

presidents in unreserved panchayats. They authors summarize that “the second cohort of female leaders does not appear to suffer from statistical discrimination”. Lastly, they found that in gram panchayats that had been twice reserved for women presidents, women were far more likely to run for and win future elections (Beaman et al. 2008)

In a recent study done in Mumbai, Bhavnani (2009) found that the probability of a woman’s winning office if the constituency had been reserved for a woman in the previous election was five times greater than the probability of a woman’s winning if the constituency had been unreserved in the previous election. Thus, in the Indian local governments in particular, previous exposure to female leaders may have a significant impact on the election of women to unreserved seats.

The above research shows strong evidence that reservation for women leaders has the following effects overall: it reduces corruption (Duflo and Topalova 2004), shifts policy towards women’s preferences (Chattopadhyay and Duflo 2004), improves overall governance (Duflo and Topalova 2004, Beaman et al. 2008, Munshi and Rosenzweig 2008) and reduces bias against women leaders (Beaman et al. 2008, Bhavnani 2009).

However, some studies do show negative or negligible effects of women’s reservation. Bardhan et al. found that under reserved women presidents, less local revenue is raised and fewer SC/ST individuals find work under unemployment programs. However, disadvantaged groups had better access to credit (2005). Ban and Rao conducted surveys in the southern states of Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala. They found that women leaders do not increase female political participation in the gram sabha or in women’s organizations (possibly because it was already high). Of seven activities, they found that reserved panchayats witnessed more education-related activities, but they found no difference in the “vast majority of activities”. Women presidents are less likely than men to meet higher-level officials. The researchers concluded that “women never perform worse than men”; however, “there is no evidence to show that reserved women presidents act in ways that are more

congruent with the preferences of women”. Ban and Rao also explored the hypothesis that women act as mere tokens of elites. They found evidence against this as the women who run for election are “from the top end of the distribution of women on landholding, wealth, and knowledge and are above average on education and age”. Moreover, less than 20% were convinced by their spouses to stand for election (Ban and Rao 2008).

Although the bulk of the research shows positive effects of women’s reservation, in the following section I highlight a methodological problem that implies that the effect may have been overestimated.

3. Methodological Critique of Previous Research: Reservation is *Not* Random in All States:

3.1. Introduction

As described above, there is a vast body of literature on the impact of reservation of presidencies for women and lower castes in Indian gram panchayats. Several of these studies are restricted to specific states where the allotment and rotation of reservation is known to be randomized. Other authors use research designs that do not depend on randomized reservation. For instance, Chattopadhyay and Duflo (2004), Beaman et al. (2008), and Bardhan et al (2005) all use information from West Bengal, where reservation for women is randomly assigned. Besley, Pande, Rahman, and Rao (2004) and Besley, Pande, and Rao (2005) utilize reservation for SC/STs in South Indian gram panchayats; however, their design does not assume that reservation was randomly assigned.

On the other hand, some studies include data from states where there is no evidence that reservation for lower castes or women is randomly assigned. Chattopadhyay and Duflo (2004) write that reservation for women is randomly assigned in West Bengal and Rajasthan, and though they verify the process for West Bengal, they acknowledge that “We could not obtain the necessary information to

perform the same exercise in Rajasthan. However, there too, the system appears to have been correctly implemented.” Munshi and Rosenzweig (2009) claim that:

Reservation of seats for historically disadvantaged groups--Scheduled Castes, Scheduled Tribes, Other Backward Castes, and women--was also introduced in the 73rd Amendment. Seats for each reserved category are assigned randomly across wards and, for the position of the president, randomly across *panchayats*, from one election to the next.

This paragraph implies that the 73rd Amendment mandates random reservation, which is not correct. Similarly, Duflo and Topalova (2004) believe that

A particularly attractive feature of the reservation policy, from our point of view, is that the states randomly selected which GPs would be reserved for women. When we compare measures of performance and satisfaction in reserved and unreserved GPs, the difference can be confidently attributed to the reservation policy.

Both Munshi and Rosenzweig (2008) and Duflo and Topalova (2004) use data from across India (including Karnataka) and assume that reservation is random in all states. Both underline the positive effects that random reservation has on their research designs.

Ban and Rao (2008), however, research the impact of women’s reservation in Kerala, Karnataka, Andhra Pradesh, and Tamil Nadu, and explicitly acknowledge that reservation for women is not random. But they suggest that

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 is 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 are 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.

The exogenous process described by Ban and Rao does not happen in Karnataka or Andhra Pradesh, which contain five of the nine districts used in their study.

Thus, many studies on Indian gram panchayats assume that reservation for women and/or lower castes is randomly or exogenously assigned in every Indian state. This is not true in Karnataka, as I show using a complete 16 year history of Karnataka reservation. Moreover, judging by state laws, few states have processes for strictly random reservation, though several states assign reservation as-if randomly.

Given that reservation is not randomly assigned in all Indian states, previous researchers may have ignored important confounding factors¹. In Karnataka, for instance, as I explain below, reserved GPs are on average larger and have more women members in the council. Both these factors could influence outcomes. Previous research may have mistakenly attributed the combined effect of a larger population, more women members, and a woman president solely to the effect of having a woman president.

3.2. Evidence Against Reservation Being Random in all Indian States:

The 73rd Amendment to the Indian Constitution mandates the rotation of reserved council presidencies. The Constitution does not provide for *random* allotment and rotation of reserved presidencies. How reservation should be rotated is left to the State legislatures.

243D. (4) The offices of the Chairpersons in the Panchayats at the village or any other level shall be reserved for the Scheduled Castes, the Scheduled Tribes and women in such manner as the Legislature of a State may, by law, provide

Provided also that the number of offices reserved under this clause shall be allotted by rotation to different Panchayats at each level.²

I explore the actual process of reservation in Karnataka and its implications in detail. Based on the Indian Constitution alone, there is no reason to assume random reservation in other Indian states. Several states have reservation rules or the State Panchayati Act posted online. Online records indicate that West Bengal, Haryana, and Kerala have random reservation. Although Maharashtra does not specify the process of reservation, they have random reservation of council seats, so it is possible that reservation of council presidencies are also random. Andhra Pradesh allocates reservation by a

¹ The advantage of randomization is that there will be no expected difference between the treatment and control groups, in this case panchayats reserved or unreserved for women presidents. Since a priori the two groups are equal, any differences in outcomes observed after the study can be attributed solely to the treatment. However, if treatment is not randomly assigned, then it is possible that there are differences between treatment and control groups. These differences, rather than the treatment, could be driving differences in outcomes.

² 73rd Amendment to the Indian Constitution, 243D, Section (4), India Code legislative Department, <http://indiacode.nic.in/coiweb/amend/amend73.htm>

descending order of sex ratio. In Karnataka, Bihar, Rajasthan, and Tamil Nadu, laws do not specify the process of allotment and rotation of reserved council presidencies. Instead, they all have some variation of the words “reservation and allotment of reservation shall take place as prescribed by the State Election Commission.” Considering that Karnataka has non-random reservation, it is inadvisable to assume random reservation in Bihar, Rajasthan, Tamil Nadu, or any of the other states for which the reservation process is unknown. In the next sections, I describe how Karnataka assigns reservation.

3.3. Data Collection

To demonstrate and analyze the process of reservation in Karnataka, I collate data from various sources. I utilize the reservation history for the gram panchayat president position procured from Karnataka’s State Election Commission by Dunning and Nilekani (2009). Specifically, this describes which gram panchayats in Karnataka had the adhyaksha (president) position reserved for SCs, STs, BCs, and women for every period of reservation from 1994-2009 (namely, the terms beginning in 1994, 2000, 2002, 2005, 2007)³.

To our knowledge, this dataset is unique, and there is no similar information for another state. On our request, the State Election Commission procured district-wide reservation history from the Deputy Commissioners of Karnataka’s 29 districts. These data were provided in hard copy in Kannada; Dunning hired translators to translate and code the data, and subsequently we combined this information with 2001 Census data for the 5,626 gram panchayats of Karnataka.

I also use demographic and socio-economic data about the gram panchayats from the Census of India 2001 records. This includes data on literacy rates, child sex ratio, population size, and caste percentages.

³ Starting from 2000, the term of the adhyaksha was reduced to 30 months.

In January 2010, I procured data from the Karnataka State Election Commission on the number of GP seats in each GP council, as well as the number of seats in each reservation category, for 20 of Karnataka's 177 taluks (sub-districts). I hired translators to code the data in English. In total, I have detailed data on GP seats for 646 GPs in 20 taluks in 5 different districts⁴.

Between May 2008-January 2010, I interviewed several officials at Karnataka's Rural Development and Panchayati Raj Department, the State Institute of Rural Development, and the Karnataka State Election Commission (Ashraf 2008, Hegde 2008, Jyotiprakash and Veerabadraya 2010, Govindaraju 2010). These interviews were crucial in understanding the process of reservation.

3.4 The Karnataka Panchayati Raj Reservation Process

In this paper, I focus entirely on the reservation process for the gram panchayats, the lowest tier in the Panchayati Raj system and arguably the most important. Researchers have not focused on taluk and zilla panchayats, the upper tiers of the Panchayati Raj.

In Karnataka, there must be one gram panchayat seat for every 400 people.⁵ Thus, gram panchayats with larger populations have more seats. Recall that the 73rd Amendment guarantees reservation of seats for lower castes and women in every gram panchayat. Specifically, in Karnataka, the number of seats reserved for SCs in a GP is proportional to the share of SC population in that GP⁶. The number of seats reserved for STs in a panchayat is proportional to the percentage of STs⁷. The Karnataka Panchayati Raj Act mandates that 1/3rd of the seats in every GP should be reserved for Backward Classes

⁴ Specifically, I have data for all 7 taluks in Mysore district, all 5 taluks in Raichur district, Dod Ballapur Taluk in Bangalore Rural District, Pandavapura Taluk in Mandya District, and Kolar, Srinivasapur, Mulbagal, Malur, and Bangarapet taluks in Kolar District.

⁵ Karnataka Panchayati Raj Act 1993, Section 5, Substituted by Act 11 of 2000.

⁶ Karnataka Panchayati Raj Act 1993, Section 5, Sub-Section 2a

⁷ Karnataka Panchayati Raj Act 1993, Section 5, Sub-Section 2b

(BCs)⁸. Additionally, “not less than one-third of the seats” in *every category* are reserved for women⁹. Thus every panchayat has a certain number of SC seats, ST seats, BC seats and General (unreserved) seats, and at least 33% seats within each of these categories is reserved for women. The Backward Class category is then subdivided into the classes Backward Class-A and Backward-Class B, with 80% and 20% of the total BC seats respectively.¹⁰ In total, thus, there are five categories: Scheduled Caste (SC), Scheduled Tribe (ST), Backward Class-A (BC-A), Backward Class-B (BC-B), and General (GEN) (unreserved).

To summarize, the number of seats for each category are calculated according to the rules below:

Table 0: Rules for Reservation of GP seats

Caste Category	Rules	Panchayati Raj Act 1993
Total Seats in All Categories	Ceiling [GP population/400]	Section 5, Subsection 1
SC seats	1.Round [GP SC percentage*Total Seats] 2.Floor rule- at least 1 SC seat per GP	Section 5, Subsection 2
ST seats	1.Round [GP ST percentage*Total Seats] 2. Floor rule- at least 1 ST seat per GP	Section 5, Subsection 2
BC seats	Round [33%*Total Seats]	Section 5, Subsection 3
GEN seats	Total Seats -SC seats -BC seats –ST seats	Section 5, Subsections 1,2, 3
SC-W seats	Ceiling [33%*SC seats]	Section 5, Subsection 4
ST-W seats	Ceiling [33%*ST seats]	Section 5, Subsection 4
BC-W seats	Ceiling [33%*BC seats]	Section 5, Subsection 4
GEN-W seats	Ceiling [33%*GEN seats]	Section 5, Subsection 4
BC-A seats	Round [80%*BC seats]	Section 5, Subsection 3
BC-B seats	Round [20%*BC seats]	Section 5, Subsection 3
BCA-W seats	Round [80%*BC-W seats]	Section 5, Subsections 3, 4
BCB-W seats	Round [20%*BC-W seats]	Section 5, Subsections 3, 4
Total Women	SCW+STW+BCW+GENW	Section 5

In addition to reserving seats within a GP, GP presidencies are reserved. Within a taluk (sub-district) GP presidencies are reserved for Scheduled Castes, Scheduled Tribes, Backward Castes and women in the same way. The numbers of SC and ST presidencies are proportional to the population

⁸ Karnataka Panchayati Raj Act 1993, Section 5, Sub-Section 3

⁹ Karnataka Panchayati Raj Act 1993, Section 5, Sub-Section 4

¹⁰ Karnataka Panchayati Raj Act 1993, Section 5, Sub-Section 3

percentage of SC and STs in a given taluk¹¹. One third of all GP presidencies should be reserved for backward classes¹², and the reservation history collected by Dunning and Nilekani (2009) proves that in 2000, 2002, 2005, and 2007, exactly 33%, 33%, 34%, and 33%¹³ respectively of all council presidencies were reserved for these Backward Classes. At least one third of the presidencies in each of these caste categories as well as in the General (unreserved) category must be reserved for women.

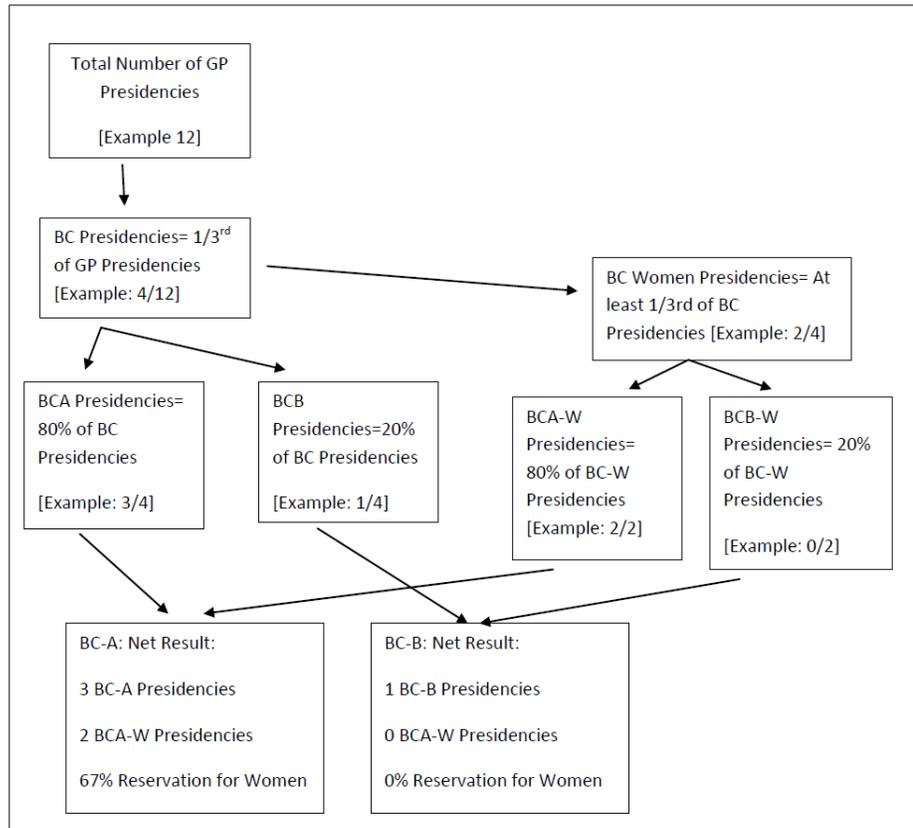
There is one exception, however, illustrated in the chart below. For the BC-B category, it is not necessary that one third of presidencies be reserved for women. Once the number of presidencies for the SC, ST, and GEN categories is fixed, then the number of GP presidencies for women in these three categories is fixed and equals at least one-third of the total presidencies in each category. However, in the case of Backward Classes, approximately one third of the GP presidencies in the taluk are reserved for the BC category. Then, at least one third of the BC presidencies are reserved for women. Next, 80% of the total BC presidencies are allotted to the BC-A category, while 20% are allotted to BC-B. Similarly, 80% of the BC presidencies reserved for women are allotted to the BC-A category, while 20% are allotted to BC-B. Thus, if there are 4 GP presidencies for the BC category in total, 2 presidencies are reserved for women (rounding up $1/3 * 4 = 1.33$). Approximately 20% of the 4 BC presidencies, i.e. one presidency, is allotted to the BC-B category. And approximately 20% of the 2 BC presidencies reserved for women, i.e. 0/2, is allotted to the BC-B category. As a result, the BC-A category gets 3 presidencies, of which 2 are reserved for women, while the BC-B category gets one presidency, which is *not* reserved for women. Thus, in the BC-B subcategory, the requirement that a minimum of one third of the

¹¹ According to the Karnataka State Election Commission officials. Note, however, Karnataka Panchayati Raj Act, 1993, Section 44, Sub-Section 2a, which states that the percentage of seats reserved for SCs or ST, should be in proportion to the state-wide SC or ST percentage. The data supports the officials' claim that the number of reserved seats is based on taluk-level SC and ST percentages. If reservation for SC presidents was truly based on the state-wide percentage-18.4%, there should be no variation across taluks. However, across 177 taluks in Karnataka, the mean percentage of SC presidents in 2007 was 16.4%, with a standard deviation of 9%.

¹² Karnataka Panchayati Raj Act, 1993, Section 44, Sub-Section 2b, Substituted by Act 29 of 1998 w.e.f. 24.8.1998

¹³ Note: Consistent with the implementation of this clause in 1998, in 1993, only 12% of the gram panchayat presidencies state- wide were reserved for backward classes.

presidencies must be reserved for women is not always satisfied. In the BC-A category, reservation for women often greatly exceeds 33%-- in this example, as a result of rounding, 67% of the presidencies are reserved for women.



Although the Karnataka Panchayati Raj Act 1993 clearly specifies the numbers of GP seats and GP presidencies that should be reserved, the Act, like the 73rd Constitutional Amendment, does not specify how reservation of presidencies for women or lower castes should be allocated or rotated. It simply says “the offices reserved ... shall be allotted by rotation to different Grama Panchayats.”¹⁴ This implies that no GP can be reserved for the same caste category in consecutive periods. In personal interviews, Hassan Ashraf, the then-Director of Panchayati Raj, Karnataka (Ashraf 2008), Mr.

¹⁴ Karnataka Panchayati Raj Act 1993, Section 44, Department of Parliamentary Affairs and Legislation, Karnataka, <http://dpal.kar.nic.in/.%5C14%20of%201993%20%28E%29.pdf>

Govindaraju, the current Director of Panchayati Raj, Karnataka (Govindaraju 2010), Mr. Hedge, the State Election Commissioner of Karnataka (Hegde 2008), and Mr. Jyotiprakash and Mr. Veerabadraya, officials at the Karnataka State Election Commission (Jyotiprakash and Veerabadraya 2010) separately explained the process to me¹⁵.

The number of seats reserved for SCs, STS, BCs, and women in each GP is constant in the ten year period between censuses. The specific seats that should be reserved rotates in different election periods. For the purposes of this paper, I ignore the process of seat reservation rotation, since I am only researching the impact of rotation of GP presidencies. Previous research, with the exception of Munshi and Rosenzweig (2008), has also been solely concerned with the process of reservation rotation for the gram panchayat president, and not the rotation of GP seat reservation.

The number of seats reserved in each GP and the number of presidencies reserved in every taluk are exogenously determined by population data. These data are used to determine both *which* GP presidencies are reserved, and the order of reservation. The process is as follows.

First, within each taluk, district officials organize gram panchayats into lists based on descending number of SC *seats*. In the first period, the top ranked GPS in the descending list are reserved for SC presidencies. In the next period, ignoring the GPs previously selected, the next set of GPs are reserved for SC presidents¹⁶. Over time, officials move down the list, so that no GP should be reserved for SC presidents a second time until all GPs have been reserved once.

¹⁵ Mr. Ashraf was and Mr. Govindaraju is responsible for allocating reservation for zilla and taluk panchayats; his juniors, the district Deputy Commissioners, are responsible for allocating reservation for gram panchayat presidents.

¹⁶ Often, there will be several GPs in a taluk with the same number of SC seats. Suppose 5 SC presidencies must be reserved in a taluk, and 4 GPs have 6 SC seats, while 4 GPs in the taluk have 5 SC seats each. In the first period of reservation, all 4 GPs with 6 SC seats will have reserved presidencies. To select the remaining GP, district-level officials randomly choose 1 of the 4 GPs with 5 SC seats.

After reservation for SCs, the gram panchayats are then sorted in a descending order of number of ST seats. The GPs already allocated to SC reservation are ineligible for ST reservation. Of the eligible GPs, the top-ranked GPs in the list are reserved for STs. In the next period, GPs that have been reserved for STs in the previous period are ineligible for repeat reservation (a GP cannot be reserved for the same caste category consecutively). Moreover, GPs that have been assigned to SC reservation in the *current* period are also ineligible. Of the remaining GPs, the top-ranked in the list are reserved for STs. Thus, just as in the case of SCs, over an entire cycle all GPs should be reserved once for an ST presidency.

After selecting the GP presidencies that will be reserved for SCs and STs, officials list GPs in a descending order of Backward Class-A seats. In the first period (P1), GPs already allocated to SC or ST reservation are ineligible to be reserved in the BC-A category. Of the remaining GPs, officials reserve the top seats in the new list for Backward Class-A. In the next period (P2), after selecting GPs for SC and ST reservation, GPs are again sorted in a descending list of BC-A seats. Officials ignore the GPs selected for SC or ST reservation in that period (P2), because these are already reserved. They also ignore the GPs assigned to BC-A reservation in the previous period (P1), because no GP can be reserved for the same caste category in two simultaneous periods. *Of the remaining*, they reserve BC-A presidencies for the GPs at the top of the list.

Once Backward Class-A Presidencies are reserved, officials follow the same process to reserved seats for Backward Class-B candidates. In the first period (P1), GPs already reserved in the SC, ST, or BC-A categories are ineligible to be reserved in the BC-B category. Officials list the remaining GPs according to a descending order of BC-B seats, and reserve the top seats in this list for BC-B presidents. In the next period (P2), GPs that have been assigned to the SC, ST, BC-A categories are ineligible for BC-B reservation. Moreover, GPs assigned to BC-B in the previous period (P1) are ineligible. Of the remaining,

they reserve BC-B presidencies for the GPs at the top of the list. The remaining GPs are all assigned to the General (GEN) unreserved category.

After assigning GP presidencies to SC, ST, BC-A, BC-B, and General Categories, district officials must choose which GP presidencies should be reserved for women in each of these categories. Recall that the number of presidencies to be reserved for women in each category is predetermined based on Census figures.

Officials organize the GPs in each category in lists sorted by descending order of the number of GP seats reserved for women *in that category*. For example, suppose a taluk has 20 GPs, and 4 GPs are reserved for SC candidates. In this case, 2/4 of the SC presidencies are reserved for SC women (at least 33%). To determine which GP presidencies should be reserved, the 4 SC presidency GPs are sorted into a descending list based on the number of SC seats reserved for women. Recall that the number of SC seats is proportional to the SC percentage in the GP, and that at least 1/3rd of the SC seats had been reserved for women. Thus the number of SC seats for women (henceforth SC-W), depends on both population (which determines the total number of seats) and SC percentage (which determines the SC seats).

Once the SC presidency GPs are sorted according to a descending list of SC-W seats, in the first period, the top GPs in this list are reserved for SC women presidents (SC-W presidents). In the example above, if the 4 GPs had 3,3,2, and 1 SCW-W seat respectively, the two GPs with 3 SC-W seats each would be reserved for an SC-W presidency.

Suppose that there are multiple GPs with the same number of SC-W seats, but only a subset of them must be reserved for an SC-W presidency. In this case, the subset of SC-W presidencies is randomly chosen by lottery. In this example, if the 4 SC presidency GPs had 3,2,2, and 1 SC-W seat respectively, the GP with 3 SC-W seats would be assigned to a SC-W presidency. Among the two GPs with 2 SC-W seats each, one would be randomly assigned by lottery to an SC-W presidency.

Note that at the threshold of reservation, reservation is occasionally truly random.

An identical procedure is used to assign reservation for female presidents in the ST, BC-A, and BC-B categories. In the general category, according to Jyotiprakash and Veerabadraya (2010), the GPs are organized according to a descending list of the *total* women's seats, rather than the General category women's seats (GEN-W). This is because SC, ST, and BC women are eligible to run for president if the seat is reserved for a General category woman, since this seat essentially is not reserved for caste. However, when I examined the reservation history for Karnataka, it became obvious that district level officials actually use descending lists of GEN-W seats, and not descending lists of total women's seats¹⁷.

In the second period of reservation, the reservation process becomes more complicated. Because no GP can be reserved for a woman in two consecutive periods, district officials must take prior reservation into account. According to State Election officials Jyotiprakash and Veerabadraya (2010), district officials should look at the entire reservation history. No GP should be reserved for a woman president twice until all GPs are reserved for a woman president once. But according to Director of Panchayati Raj Mr. Govindaraju (2010), whose office actually implements reservation, district officials must look only at the *immediately preceding* reservation period to determine women's reservation rotation. Mr. Govindaraju even said that the Karnataka High Court had declared that the Kannada words "nikata purva", meaning "immediately preceding" would be pertinent in determining rotation, and the entire reservation history would not matter. Thus, officials would not need to consider whether a GP was reserved for a woman two periods ago when deciding whether to reserve it for a woman president in the current period.

The reservation history data supports Mr. Govindaraju's claim. The following table shows the percentage of presidencies reserved for women that were reserved in the prior period and 2 periods

¹⁷ I explore this issue further in Appendix A

ago, respectively, for all periods of reservation. Evidently, officials do rotate the presidencies, and rarely (<11%) repeat women's reservation in two consecutive periods. However, they appear to give no weight to reservation two periods before.¹⁸ Thus, although for SC or ST caste reservation in a complete cycle all GPs are reserved at least once, there is no such requirement for women's reservation.

Table 1: History of Repeat Reservation

Among presidencies reserved for women in each period:	1994	2000	2002	2005	2007
Percentage of presidencies reserved for women one period before	--	11%	2%	7%	6%
Percentage of presidencies reserved for women two periods before	--	--	32%	49%	47%

Thus, in the second and future periods of reservation, officials consider all GPs reserved for a female president in the prior period to be ineligible for reservation in the current period. Among the eligible GPs, officials pursue an identical process to the one described above for the initial period.

GPs with more seats are on average more likely to be reserved. Take the following example of three GPs in the General category (assume that all three were always in the General category). One of them must be reserved for a woman president.

GPs in descending order of GEN-W Seats	GEN-W seats
Aland	9
Basar	8
Chikuru	6

In the first period, Aland is reserved for a GEN-W female president, as it is the GP with the most GEN-W seats. In the second period, Aland is ineligible, and thus Basar is reserved for a female president. In the third period, however, Basar is ineligible. Aland and Chikuru are both eligible, and Aland has more GEN-W seats. Thus Aland is reserved again *even though* Chikuru has never been reserved for a woman

¹⁸ Keep in mind that in general, GPs are never in the same caste category twice in a row. A GP can have an SC presidency in 1994, a GEN presidency in 2000, and ST presidency in 2002, a BC-A presidency in 2005, and then another GEN presidency in 2007. Thus, the component GPs in each caste category list are always changing, and the relative position of a GP in a descending list of women's seats is always changing as well. This makes it very difficult to look at the entire history of women's reservation, so "immediately preceding" is much simpler.

president. Thus while SC,ST and BC reservations require all presidencies to have been reserved once before repeating a reservation, this does not hold true for women's reservation.

3.5. Implications of Karnataka's Reservation Process:

Evidently, reservation in Karnataka is *not* randomly assigned. In this section, I explore the implications of this non-random process using Karnataka's 15-year reservation history.

To do so, I first calculate the number of seats in each GP. I have the data on the number of GP seats for 20 taluks, out of 177 taluks state-wide. These taluks have 646 of the state's 5,626 GPs. To get statewide data, I generate the predicted number of seats in each GP according to law, and test these predictions against the actual data for 20 taluks.

According to law, there must be 1 GP member for every 400 citizens. The official data make it clear that the law has been interpreted as 'at least 1 GP member for 400 citizens'. The variable "GP population/400" gives a poor accuracy rate when rounded to the nearest integer, but if the variable is always rounded up, the accuracy rate of the prediction is 86%. Henceforth, I use this estimate for the number of seats in each GP. I use the official data for the 20 taluks where they are available.

Because the reservation of presidencies for women depends on the number of women's seats and hence depends on population, there are systematic differences in total population, number of seats, and number of women's seats between reserved and unreserved panchayats in each period.

Table 2: Systematic Differences between Reserved and Unreserved Panchayats

Difference in Means across GPs reserved and unreserved for women	1994	2000	2002	2005	2007
Difference in Total Population (Reserved-Unreserved)	364.1*** (77.4)	363.2*** (62.6)	-219.7*** (62.6)	235.4*** (64.4)	233.5*** (63.7)
Difference in Number of Seats (Reserved-Unreserved)	0.897*** (.19)	0.971*** (.16)	-0.59*** (.16)	0.59*** (.16)	0.58*** (.16)
Difference in Women's Seats (Reserved-Unreserved)	0.353*** (0.06)	0.348*** (0.05)	-0.202*** (0.05)	0.276*** (0.05)	0.193*** (0.05)

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Implication 1: There are consistent population differences across gram panchayats reserved and unreserved for women, and prior to reservation, panchayats are *not* identical.

Mean population state-wide is 6133 people/GP. As seen above, differences across GPs reserved and unreserved for women ranged from 220 to 364 people in various periods of reservation. The standard deviation of total population statewide is 2287, so Cohen's d ¹⁹ ranges from 0.1 to 0.16—implying a relatively small practical significance. However, despite the low Cohen's d range, a difference ranging from 3.6% to 6.0% of total population is significant for numerous outcome indicators. For instance, while testing total expenditure on drinking water infrastructure across GPs in 2000-2002 (when population was 5.9% higher in reserved GPs), one might erroneously conclude that women leaders spent 5.9% more on drinking water, *even if* per capita expenditure was constant across GPs. However, if researchers measured outcomes per capita, the fact that there are population size differences across reserved and unreserved panchayats would not affect results.

Implication 2: There are consistent differences in the number of members across gram panchayats reserved and unreserved for women.

The mean number of members per GP is 15.81 across Karnataka. The difference across GPs reserved and unreserved for women ranged from 0.58 to 0.97 members in different periods. It is possible that systematically larger or small councils behave differently, but researchers assuming random reservation for women in Karnataka would have erroneously attributed these differences to female presidents. It may be that council size does not affect outcomes, however, that claim should be made explicitly.

¹⁹ Cohen's d conveys information about the practical significance of a test result. With large-sample studies, it is possible to achieve a high statistical significance even for a small difference-in-means. Cohen's d is defined as the difference between two means divided by a standard deviation for the data. It thus compares the difference-in-means to the population variance.

Implication 3: There are consistent differences in the number of women members across gram panchayats reserved and unreserved for women.

Recall the selection of GPs for women's reservation takes place through descending lists of number of *women* members in the GP. The mean number of women members per GP in Karnataka is 6.89. The difference across reserved and unreserved GPs ranged from 0.19 to 0.35 women members across time. Even though the percentage of women members will be roughly constant at 33% in councils of various sizes, the number of women could make a difference. There could be an interaction effect of having a female leader and more women members, versus having a male leader and fewer women members. Researchers assuming random reservation for women in Karnataka could have attributed pro-women policies solely to the female leader, even if part of the credit should have gone to the increased number of women on the council.

3.6. Conclusion: Previous Research has Misestimated the Effect of Reservation

In Karnataka, on average GPs reserved for women have larger populations, more seats, and more women members. All these factors could (but may not) affect outcomes. For several states, including Bihar, Rajasthan, and Tamil Nadu, the legislature has not specified the reservation process.

In Andhra Pradesh, reservation is done according to descending lists based on sex ratio²⁰. In Karnataka, determining reservation according to descending lists of women's members has resulted in systematic differences in population size, GP council size, and number of women members across reserved and unreserved GPs in each period of reservation, as I showed in Table 2. in Section 3.5. Similarly, in Andhra Pradesh, determining reservation according to descending sex ratio lists could result in systematic differences in sex ratios between reserved and unreserved GPs. It is possible that within a sub-district, sex ratios are very similar in different GPs, and hence that reservation according to

²⁰ Sections 7 & 8, Andhra Pradesh Panchayat Raj (Reservation of Seats of Ward Members and Offices of Sarpanchas of Gram Panchayats) Rules. <<http://apsec.gov.in:8080/apsec/Reservations/reservationsgp.htm>>

descending lists of sex ratios is indeed as-if random in Andhra Pradesh. However, researchers need to establish that there is little variance in sex ratios with a sub-district. If there is variation, then reservation for female GP presidents may be correlated with higher sex ratios. Higher sex ratios imply that women in the GP are relatively empowered, and that there is less female feticide and female infanticide; less nutritional and healthcare discrimination against women and girl; fewer 'dowry deaths', i.e. murders of brides who bring in small dowries; lower maternal mortality rates, etc. Systematic differences in sex ratios could confound results.

Reservation is definitely not random in Karnataka and Andhra Pradesh, two large states used frequently in previous studies, including Duflo and Topalova (2004), Ban and Rao (2008), and Munshi and Rosenzweig (2008). Reservation may not be random in several other states. Non-random reservation could, but not necessarily would bias the results of research assuming randomization²¹. Thus, it is possible that previous research has misestimated the impact of reservation for female GP presidents.

4. Random Assignment at the Margin of Reservation

Although reservation for women is non-random in Karnataka, recall that if a group of GPs has the same number of women's seats, and a subset is selected for female presidents, then the subset is randomly reserved by lottery. In a descending list of women's seats, GPs at the top of list with several seats are assigned to reservation, and GPs at the bottom of the list with very few seats are not. At the threshold, the cut-off point between reservation and non-reservation, if there are several GPs with the

²¹ As T.N. Srinivasan explains, "there is a potential for bias-- but in cases where, for example, treatment and control groups do not in fact (differ) in the joint distribution of all observed factors even though the assignment to the two groups was not random, this lack of randomization is immaterial. Even (if) the distributions differed and this difference is attributable to a subset of factors which happen to be non-confounding i.e. having no potential effect on differences in outcomes between the two groups, again the lack of randomization is immaterial." (Srinivasan, T.N. "Fwd: file". E-mail to the author. 3rd March 2010.)

same number of seats, then reservation is truly randomly assigned within the subset of GPs. I compare GPs at the margin that were randomly assigned to reservation.

4.1. Data Collection

I use the data described in the Section 3.3., including a complete reservation history collected by Dunning and Nilekani (2009), Census 2001 data, and data on GP seats for 20 taluks from the State Election Commission.

I also use various government data to measure GP outcomes. I procured publicly available bi-yearly reports from Karnataka's Rural Development and Panchayati Raj (RDPR) department. These reports, which cover the period from April 2005 to March 2008, contain data on the activities of the 5,626 gram panchayats in Karnataka. The indicators include the number of gram panchayat meetings held and the number of gram sabha meetings (that is, general gatherings open to the community) held; the level of drinking water infrastructure, how much of the infrastructure is in disuse, and how much is spent on maintenance; the number of latrines built in the village; and indicators of tax compliance and total tax demanded from the citizens. These data are supplied to the Karnataka Government by the gram panchayats, and are not audited. Although there may be significant measurement errors, there is no reason to expect these errors to be correlated with reservation.

The Chief Decentralization Analysis Cell of the Gram Swaraj Project, Government of Karnataka collects extensive fiscal data from Karnataka's 5,626 panchayats, and provided me with 2005-2007 data. Some of these data are available for all GPs, while some is only available for the districts where the Gram Swaraj Project takes place. These data have been extensively audited at the panchayat level, and I expect it to be highly accurate.

4.2. Empirical Design

I recreate the reservation procedure described in detail in Section 3.4. As I only have data on the number of seats in every GP for 20 taluks, I use the Karnataka Panchayati Raj Act 1993 laws to predict the number of seats in each caste category in each GP. I then compare the predictions to the actual figures where I have State Election Commission data to calculate the accuracy rate of each prediction.

As I mentioned in Section 3.5, there should be 1 GP member for every 400 citizens. If the variable “GP population/400” is rounded up the next highest integer (and *not* to the nearest integer), this estimates the number of GP seats with an 86% accuracy rate.

In the table below, I list the rules I used to estimate the number of seats in each category in each GP, the relevant section of the Karnataka Panchayati Raj Act 1993, and the accuracy rate of the prediction when compared to the 646 GPs in the 20 taluks.

Table 3: Estimation of GP Seat Reservation

Caste Category	Rules	Panchayati Raj Act 1993	Accuracy Rate
Total Seats in All Categories	Ceiling [GP population/400]	Section 5, Subsection 1	85.62%
SC seats	1.Round [GP SC percentage*Total Seats] 2.Floor rule- at least 1 SC seat per GP	Section 5, Subsection 2	93.23%
ST seats	1.Round [GP ST percentage*Total Seats] 2. Floor rule- at least 1 ST seat per GP	Section 5, Subsection 2	93.57%
BC seats	Round [33%*Total Seats]	Section 5, Subsection 3	87.82%
GEN seats	Total Seats -SC seats -BC seats -ST seats	Section 5, Subsections 1,2, 3	88.32%
SC-W seats	Ceiling [33%*SC seats]	Section 5, Subsection 4	97.29%
ST-W seats	Ceiling [33%*ST seats]	Section 5, Subsection 4	96.78%
BC-W seats	Ceiling [33%*BC seats]	Section 5, Subsection 4	93.57%
GEN-W seats	Ceiling [33%*GEN seats]	Section 5, Subsection 4	92.23%
BC-A seats	Round [80%*BC seats]	Section 5, Subsection 3	87.82%
BC-B seats	Round [20%*BC seats]	Section 5, Subsection 3	96.79%
BCA-W seats	Round [80%*BC-W seats]	Section 5, Subsections 3, 4	96.95%
BCB-W seats	Round [20%*BC-W seats]	Section 5, Subsections 3, 4	94.92%

Although imperfect, the accuracy rates for the relevant predictions of women’s seats (SC-W, ST-W, BCA-W, BCB-W, GEN-W) ranged from 92%-97%. I henceforth use these estimates when I refer to the

number of seats in a GP. For the 646 GPs for which I already have this data, I use actual State Election Commission numbers²².

The motivation for my research design is that, prior to assignment to reservation, there should be no systematic difference between gram panchayats with the same number of seats for women, if some of them are randomly assigned by lottery to a female president. GPs with higher numbers of women's seats are invariably assigned to female presidents. However, at the threshold of reservation, when GPs have the same number of seats and a subset is reserved, reservation is randomly assigned. At the threshold of reservation, then, gram panchayats that are either chosen or not chosen for reservation will have the same expected value for any confounding factor. Thus, picking panchayats from across many taluks that are at the threshold for reservation in a given electoral term, I can construct a study group of panchayats in which assignment to reservation is random. Any differences in governance indicators across reserved and unreserved panchayats can then be attributed to the causal impact of reservation, and not to confounding factors that are equal in expected value by construction across reserved and unreserved GPs.

To identify the GPs at the margin that were randomly assigned to reservation for female presidents, I recreate the reservation process. As my outcome data is for the months April 2005-March 2007, i.e., the Indian fiscal years '05-'06 and '06-'07, the relevant reservation is from the period April 2005- October 2007. Gram panchayat elections were held in Karnataka in March 2005, which initiated a new period of reservation. I used the reservation history to look at which GPs were actually reserved for female presidents in 2005.

²² I have procured final data on women's seats for all GPs from the Karnataka State Election Commission in March 2010, and will be updating the results in the future. I was unable to get the data translated in time, and so could not update results for the purpose of this paper.

Recall that all GPs in each of Karnataka's 180 taluks (sub-districts) are assigned to one of 5 categories- SC, ST, BC-A, BC-B, and GEN- for caste reservation for president. Within these categories, the number of GPs that must be reserved for a female president is predetermined (at least one-third of the presidents in the SC, ST, and GEN categories must be women. In the BC category, at least one-third must be women, and then 80% of the BC-women presidents must be in the BC-A category, while 20% are in the BC-B category).

To determine *which* GPs should have a female president, I looked at all the GPs in each caste category in each taluk separately, as the district officials would. I removed all GPs that had been reserved for women presidents in the previous 2002-2005 period, as these were ineligible for repeat reservation.

In the SC category, I was left with all GPs that were reserved for SC presidents but had not been reserved for women presidents in the immediately preceding period. Within each taluk, I sorted these GPs into a descending list according to the number of SC-Women seats. GPs with more SC-W seats were reserved for SC-W presidents, as per the Karnataka process of reservation. However, when a group of GPs had the same number of SC-W seats, and only a subset had to be reserved, the subset was randomly assigned by lottery to reservation. Thus, I could directly compare outcomes in the GPs that were reserved and those that were not. Within each group of taluk GPs with the same number of SC-W seats, I assigned the GPs that were reserved to the "Reservation Treatment" group, and I assigned the GPs that remained unreserved to the "Control" group.

For example, in Holalkere Taluk in Chitradurga District, 7 GPs were assigned to the SC category. 4 had been unreserved for women in the previous period, of which 3 needed to be reserved for women. Two GPs had 2 SC-W seats, and officials assigned both these to SC-W presidents. Two GPs had 1 SC-W seat. Officials chose one of these GPs for an SC-W president. I know that officials chose the GP through a

random lottery. Thus, I assigned the GP with 1 SC-W seat that had been reserved to the “Reservation Treatment” category, and I assigned the GP with 1 SC-W seat that was not reserved to the “Control” category.

I repeated this process for all 177 taluks, for all 5 categories- SC, ST, BC-A, BC-B, and GEN. In Appendix A, I discuss some nuances of the research design.

Ultimately, I had a treatment group of 887 GPs, and a control group of 923 GPs, and hence a final dataset of 1,810 GPs. Because reservation is randomly assigned by lottery at the margin, I knew that these GPs were truly randomly assigned to treatment and control. I was thus able to compare GP outcome data to see whether reservation for a female president has any impact on outcomes.

It may be surprising that as many as 1,810 GPs out of 5,626 were at the margin of reservation. This happened because within the SC, ST, and BC categories, most GPs had the same number of women’s seats. 90% of all GPs have exactly 1 ST-W seat. 67% of all GPs have exactly 1 SC-W seat, and another 28% have 2. 82% of all GPs have 2 BCA-W seats. So for example, when selecting BCA-W presidents in a taluk, officials randomly chose a subset of a fairly large group of GPs, all of which had 2 BCA-W seats. I was able to include all such GPs in my dataset.

I confirmed the randomization by comparing reserved and unreserved gram panchayats on pre-treatment variables. Table 4 indicates that the two groups have no significant difference with regard to several indicators from the 2001 Census.

Table 4: Reservation of Panchayat Presidents: Randomization Checks

	Treatment Group (1): Reserved for Female Presidents	Control Group (2): Unreserved	Difference of Means	p-value (two sided)
Total population	6081.4 (59.4)	6154.0 (62.4)	73.9 (86.2)	0.392
ST population	460.3 (20.4)	465.2 (20.5)	4.8 (29.0)	0.868
SC population	1080.3 (22.0)	1109.7 (23.4)	29.4 (32.2)	0.361

Female population	3005.7 (29.1)	3047.0 (30.5)	41.4 (42.3)	0.329
Child Sex Ratio (Female Children/1000 Male Children)	950.5 (2.6)	953.3 (2.5)	2.7 (3.5)	0.437
Literacy Rate	0.5174 (0.0036)	0.5207 (0.0037)	0.0022 (0.0053)	0.526
Labor Force (Number of workers)	2987.4 (30.9)	3025.5 (29.8)	28.1 (42.9)	0.374
Number of Villages/GP	5.271 (0.122)	5.380 (0.125)	0.109 (0.174)	0.532
Population Density (People/Hectare)	2.569 (0.079)	2.657 (0.069)	0.88 (0.105)	0.401

Standard Errors in Parentheses * p<0.05, ** p<0.01, *** p<0.001

All results at the 95% confidence level.

N=1809

Subsequently, I selected relevant indicators of government performance from the Rural Development and Panchayati Raj Department over four 6-month periods: April-Sep '05, Oct'05-Mar'06, April-Sep '06, and Oct'06-Mar'07. The 27 indicators are listed below. These were repeated for all 4 six-month periods; a total of 108 (27 into 4) independent sampling t-tests were done across the two groups. The variables relating to the number of gram sabha and gram panchayat meetings and decisions reveal whether female leaders have greater difficulty or are less competent at scheduling meetings, organizing village gatherings, and passing resolutions. The set of variables on tax collection test whether female presidents are unable to enforce tax compliance, particularly since households are male-headed. As women are strongly concerned with drinking water infrastructure (Chattopadhyay and Duflo 2004), I include variables about water infrastructure, expenditure on water infrastructure, and latrine construction.

Table 5: Dependent Variables Used- Indicators of Government Performance:

Gram Panchayat Functioning	Gram Panchayat Revenues and Expenditures	Gram Panchayat Responsibilities: Water and Sanitation
Number of Gram Panchayat meetings conducted	Demand for Taxes: Previous year's balance	Total number of borewells with handpumps
Number of decisions made at Gram Panchayat meetings	Demand for Taxes: Current year's balance	Total number of borewells with handpumps not in use
Number of Gram Sabha meetings conducted	Demand for Taxes: total balance	Maintenance expenditure on borewells with handpumps
Number of decisions made at Gram Sabha meetings	Collection of taxes: Apr-Sep	Total number of mini water supply schemes
	Collection of taxes: Oct-Mar	Total number of mini water supply schemes not in use
	Collection of taxes: total	Maintenance expenditure on mini water supply schemes
	Net Balance: previous year	Total number of piped water supply schemes
		Total number of piped water supply schemes not in use

	Net Balance: current year Net Balance: total	Maintenance expenditure on piped water supply schemes Total Expenditure on water supply Water Rate: Demand Water Rate: Collection Individual latrines built Community Latrines built
--	---	---

I also conducted 178 t-tests using the Gram Swaraj Project fiscal data (89 variables on tax collection, grants received, and expenditure on different schemes, for the two fiscal years 2005-2006 and 2006-2007).

4.3. Results and Discussion

Overall, the results show very weak effects of reservation on the available governance indicators. The difference of means between the two groups on any available indicator of government performance was statistically significant for just 6 t-tests out of 286.

Results for the 108 t-tests from the Rural Development and Panchayati Raj Department are shown in Appendix B (27 variables over four time periods). The difference of means between Treatment Group 1 (reserved presidents) and Control Group 2 (unreserved presidents) are shown, along with standard errors. In no case is the p-value less than 0.05. There was thus no statistically significant effect of reservation on a variety of indicators, including the number of gram panchayat and gram sabha meetings held, the number of decisions taken at the meetings, the taxes raised, the number of individual and community latrines constructed, the status of drinking water infrastructure, and the amount spent on maintaining drinking water infrastructure. Although these data are not audited, it is submitted to the Rural Development and Panchayati Raj Department by GP-level bureaucrats. There is no reason to suppose that any measurement errors are correlated with reservation.

Of the 178 Gram Swaraj Project t-tests, only 6 t-tests were statistically significant. The results are shown in Appendix C (89 variables over two fiscal years). These data were sent to the State Accounts

Department by the GPs and was extensively audited by the Gram Swaraj Project team. I expect it to be accurate.

In 2006-2007, reserved panchayats received Rs. 2,298 more in grants for the Vana-Samvadhana (afforestation) Scheme (*Mean=Rs. 2,535, $p=0.0204$, Cohen's $d^{23}=0.21$*). The reserved GPs also spent Rs. 1,333 more under this scheme (*Mean=Rs. 1,213, $p=0.0127$, Cohen's $d=0.20$*). These two measures were naturally highly correlated.

In both 2005-2006 and 2006-2007, reserved GPs earned less though "Income from GP Permanent Assets". For 2005-2006, reserved GPs earned Rs. 6,180 less (*Mean=Rs. 16,688, $p=0.0246$, Cohen's $d=0.08$*). In 2006-2007, reserved GPs earned Rs. 6,108 less (*Mean=Rs. 14,417, Cohen's $d=0.09$*). Assuming GP permanent assets do not change from year to year, it is natural that these measures are correlated. This result seems like an aberration, since reserved GPs raised as much as unreserved GPs from property taxes, 'other' direct taxes, water taxes, general taxes, license fees, and 'other' fees.

More interestingly, in 2005-2006, reserved GPs spent Rs. 13,120 less on "General administration expenditures incurred out of untied state grant and own revenues" (*Mean=Rs. 159,212, $p=0.042$, Cohen's $d=0.08$*). They also spent Rs. 79,790 less on all expenditures combined (*Mean=Rs. 1,501,792, $p=0.0292$, Cohen's $d=0.05$*). However, the practical significance as measured by Cohen's d is low. Moreover, there was no difference in these indicators in the 2006-2007 fiscal year.

These 6 statistically significant results are negligible in the larger picture of 286 t-tests. No difference was significant at the 99% significance level. At the 95% confidence level, out of a hundred t-tests we can expect five to show a Type I error of rejecting the null hypothesis when it is true. When

²³ Cohen's d conveys information about the practical significance of a test result. With large-sample studies, it is possible to achieve a high statistical significance even for a small difference-in-means. Cohen's d is defined as the difference between two means divided by a standard deviation for the data. It thus compares the difference-in-means to the population variance.

only 6 of 286 t-tests reject the null hypothesis, it is consistent with this expectation. No test was significant at the Bonferroni-corrected significance level²⁴.

Importantly, there is no evidence that reserved women leaders raise less tax revenue or face difficulty obtaining grants. Nor do they spend more on public health; the Rural Water Supply Project; the Swacha Grama Yojane Scheme which provides smokeless stoves and sanitation; the Total Sanitation Campaign; the Rural Water Maintenance Scheme; or the Jala Rakshane (Water Protection) Scheme. The Rural Development and Panchayati Raj Department data indicates there were no differences in meetings held, decisions taken, drinking water infrastructure investment, and several other variables of interest.

These null results are contrary to the research showing that reservation influences public goods provision and governance. However, the published literature is heavily biased towards West Bengal, and the results perhaps cannot be extrapolated to South India. Interestingly, Ban and Rao (2008)'s study in South India also found null effects of reservation for women. It is also possible that any differences caused by reservation were not captured in the outcomes indicators I used.

The lack of group differences is consistent with many theories, none of which are empirically tested in this paper. In one theory, reserved female presidents are dominated by male council members or male family members. If this is true, we would not expect to see group differences on performance indicators. Irrespective of the official leader, male preferences would be implemented. It maybe that that male elite elect weak women presidents. It is noteworthy that Ban and Rao found some evidence to the contrary (2008). Alternatively, gram panchayat bureaucrats may have control over most aspects of panchayat functioning, and it is possible that the panchayat leader has little real power. Of course, a vast literature body suggests that the gram panchayat president is powerful. It is possible that bureaucrats

²⁴ A Bonferroni-correction addresses the problem of multiple-comparisons. To maintain the significance level for the whole family of n tests to be (at most) α , the Bonferroni correction tests each of the individual tests at a significance level of (α/n) . In this case, the Bonferroni correct significant level is $0.05/286$, which is about 0.0002.

have at least some power, and that they are biased against women leaders, which prevents female presidents from governing differently. Potentially, several of these mechanisms are operating simultaneously.

Importantly, my research joins the collective body of evidence (Chattopadhyay and Duflo 2004, Duflo and Topalova 2004, Beaman et. al 2008, Besley et al. 2004) that reservation in Indian panchayats has no negative impact on government functioning. As Duflo writes, reservation can have a negative effect through the dominance of the lower-caste leader or woman by a more powerful figure, lame duck presidents, and candidates with lower average skills (2005). So far, no study done of the modern Indian panchayat has shown that reserved leaders perform worse than unreserved leaders.

5. Conclusion

It is increasingly evident that reservation for disadvantaged groups has no negative effect on government functioning. Some research shows that reservation improves transfers and public goods provision to disadvantaged groups or women. Moreover, reservation for women may remove or reduce implicit biases, or increase the participation of women in civic life. In the long run, this could lead to female or lower-caste leaders becoming competitive in unreserved seats, and more broadly, could reduce the pervasive caste and gender discrimination in Indian society. Contrary to previous research showing positive outcomes, I find very weak effects or null effects of women's reservation on several variables of interest. My study join the large body of work that shows that reservation does not have negative effects.

My null results are explained by several theories, most of which have not been tested. For instance, it is possible that women presidents are powerless and male vice-presidents or family members hold de facto power. Ban and Rao (2008) find that only 20% of women presidents are encouraged by their husbands to run, which implies that family control is not widespread. However, I am not aware of research investigating whether the vice-president holds de facto power, and more

research is needed on the role of male family members. Ban and Rao (2008) show that women presidents are not weaker than the average woman, so it seems unlikely that male elite are electing weak token presidents, but it would be useful to have these results replicated elsewhere.

Overall, all the research cited in this paper indicates that the gram panchayat president does have influence, and is not powerless relative to the bureaucrats. However, it is possible that bureaucrats assume greater power under women presidents, either because women presidents are less educated and less experienced, or because bureaucrats are biased. The enhanced power of the bureaucrats under female presidents could offset any gains to women because of the female president's preferences. This could explain my null results. Dunning and Nilekani (2009) do find some evidence that bureaucrats behave differently under lower caste presidents. Research is needed to see if bureaucrats behave differently under women presidents, and whether this nullifies potential gains of reservation.

Research showing that women leaders perform as well as unreserved leaders is reducing some of the protests against reservation. A Constitutional Amendment Bill to reserve 50% of gram panchayat seats and presidencies for women has been introduced²⁵. In March 2010, the upper house of Parliament passed the Women's Reservation Bill to implement 33% of seats in the national and state legislatures for women²⁶. That night, television commentators cited research by Duflo and others as evidence of the positive effects the new bill could lead to²⁷. Ensuring adequate political representation for women is crucial to providing gender equality, and I hope this paper contributes to the body of research on the topic.

²⁵ President Pratibha Patil. "President Pratibha Patil's Address to Parliament". 22 February 2010. <<http://beta.thehindu.com/news/national/article111566.ece>>

²⁶ Dhar, Aarti. "Women's groups hail clearance for quota bill". *The Hindu* 28 February 2010. <<http://beta.thehindu.com/news/national/article123586.ece>>

²⁷ Sharmila Tagore and others. NDTV 24x7. Bangalore, India. March 9th, 2010.

Works Cited:

- "145 (2) Half-Yearly Pragathi Reports (English)". Rural Development and Panchayat Raj Department. August-October 2008. <http://stg1.kar.nic.in/rdpr_hyr/rep_type_eng.asp>
- 73rd Amendment to the Indian Constitution, 243D, Sections (3) and (4). India Code Legislative Department. <<http://indiacode.nic.in/coiweb/amend/amend73.htm>>
- Andhra Pradesh Panchayat Raj Rules. Sections 7 & 8 (Reservation of Seats of Ward Members and Offices of Sarpanchas of Gram Panchayats). <<http://apsec.gov.in:8080/apsec/Reservations/reservationsgp.htm>>
- Ashraf, Hassan. Director, Panchayati Raj, Karnataka. Personal Interview. May 24th, 2008
- Ban, Radu and Vijayendra Rao. "Tokenism or Agency? The Impact of Women's Reservation on Village Democracies in South India." Economic Development and Cultural Change 56 (2008): 501-530.
- Bardhan, Pranab, Dilip Mookherjee, and Monica Torrado. "Impact of Reservations of Panchayat Pradhans on Targeting in West Bengal". Working Paper, University of California Berkeley, 2005.
- Lori Beaman, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. "Powerful Women: Does Exposure Reduce Bias?" Center for International Development, HKS Faculty Research Working Paper Series and NBER Working Papers (175, RWP08-037 and 14198). 2008.
- Besley, Timothy, Rohini Pande, Lupin Rahman, Vijayendra Rao. "The Politics of Public Good Provision: Evidence from Indian Local Governments." Journal of the European Economic Association 2.2-3 (2004): 416-26.
- Besley, Timothy, Rohini Pande, and Vijayendra Rao. "Participatory Democracy in Action: Survey Evidence from South India." Journal of the European Economic Association 3.2-3 (2005): 648-657
- Bhavnani, Rikhil. "Do Electoral Quotas Work after They Are Withdrawn? Evidence from a Natural Experiment in India" American Political Science Review 103 (2009): 23-35
- Census of India 2001 Karnataka. Registrar General & Census Commissioner, India. Unpublished. CD-ROM.
- Chattopadhyay, Raghavendra, and Esther Duflo. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." Econometrica 72.5 (2004): 1409-43.
- Duflo, Esther, and Petia Topalova. "Unappreciated Service: Performance, Perceptions, and Women Leaders in India." Unpublished manuscript, Department of Economics, Massachusetts Institute of Technology (2004).
- Duflo, Esther. "Why Political Reservations?" Journal of the European Economic Association, 3.2-3 (2005): 668-678.
- Dunning, Thad and Janhavi Nilekani. "When Formal Institutions Are Not Enough: Caste, Party Politics, and Distribution in Indian Village Councils." Working Paper, Department of Political Science, Yale University (2009). Presented at the Conference on Distributive Politics in Electoral and Legislative Politics, Yale University, 7th November 2009.
- Election Commission of India. Election Commission of India. <www.eci.gov.in>
- Ghatak, Maitreya, and Maitreesh Ghatak. "Grassroots Democracy: A Study of the Panchayat System in West Bengal." Mimeo, Development Research Group Calcutta and University of Chicago. 1999.
- Govindaraju. Director of Panchayati Raj, Karnataka Rural Development and Panchayati Raj Department. Personal Interview. January 3rd, 2010.

- Gram Swaraj Project fiscal data. Unpublished. Provided by Mr. U.A. Vasanth Rao of the Chief Decentralization Analysis Cell of the Gram Swaraj Project. June 2009.
- Hegde, M.R. State Election Commissioner, Karnataka. Personal Interview. June 13th, 2008.
- Jyotiprakash and Veerabadraya. Officials at the Karnataka State Election Commission. Personal Interview. January 4th, 2010.
- Karnataka Panchayat Raj (Conduct of Election) Rules -1993, Section 20. State Election Commission, Karnataka. Department of State Election Commission, Government of Karnataka. <http://karsec.gov.in/orders-notifications-fs.html>
- Karnataka Panchayati Raj Act 1993, Sections 5 and 44. State Election Commission, Karnataka. Department of State Election Commission, Government of Karnataka. <<http://karsec.gov.in/reservationrules-fs.html> >
- Mohan, G.R. Official at Abdul Nazir Sab State Institute of Rural Development, Karnataka. Personal interview. June 2nd, 2008.
- Munshi, Kaiwan, and Mark Rosenzweig. "The Efficacy of Parochial Politics: Caste, Commitment, and Competence in Indian Local Governments." NBER Working Paper No. W14335. September 2008.
- Norris, Pippa and Ronald Inglehart. "Women and Democracy: Cultural Obstacles to Equal Representation." *Journal of Democracy* 12.3 (2001): 126-140.
- Pande, Rohini. "Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India." *American Economic Review* 93.4 (2003): 1132-51.
- Prakash, Nishith and Chin, Aimee Y. "The Redistributive Effects of Political Reservation for Minorities: Evidence from India". 2009. <<http://ssrn.com/abstract=1003837>>
- Raghunandan, T. R. Official in Rural Development Department, Ministry of India. Personal interview. May 18th, 2008.
- Rural Development and Panchayat Raj Department. Accessed over March 2008-October 2009. <www.rdpr/kar.nic.in>
- State Election Commission, Karnataka. Department of State Election Commission, Government of Karnataka. <www.karsec.gov.in>
- State Election Commission, Karnataka. Unpublished Data on the number of GP seats in 600 Karnataka GPs. Procured and translated January-February 2010.
- UNICEF. *The State of the World's Children 2007*. New York: UNICEF, UNICEF House. 2007
- Washington, Ebonya L. "Socialization: How Daughters Affect Their Legislators' Voting on Women's Issues". *American Economic Review*. 98.1 (2008): 311-32
- Website on Census of India. Registrar General & Census Commissioner, India. <www.censusindia.gov >

Appendix A: Further Details on the Research Design

While implementing the research design described above, I encountered several problems.

First, there was some missing data. I had to combine data acquired from the Gram Swaraj Project, the Census 2001, the Rural Development and Panchayati Raj (RDPR) department, and two datasets from the Karnataka State Election Commission (SEC). In all government records, GP names are originally in the local language Kannada. I received translated datasets from the Gram Swaraj Project, Census, and RDPR department. Dunning and Nilekani (2009) hired translators for one SEC dataset and I hired translators for the other SEC dataset. For each of the five datasets, different individuals transliterated Kannada names into English. Inevitably, each translator spelled the GP names differently. In each of the 177 taluks (sub-districts), I used the Census spellings and manually replaced alternately spelled names in other datasets with the Census spelling. However, in several cases I was unable to accurately match Census spellings with alternate spellings. Although there are 5,626 GPs in Karnataka, I had complete data for only about 5,250. However, there is no reason to expect that transliteration errors were associated with reservation. I do not expect that the missing data biased my results.

Second, there were multiple instances when descriptions of reservation given by different officials conflicted, or when data or the law conflicted with the descriptions (examples in footnote 11, page 19; page 24). Most importantly, both the State Election Commission officials and the Rural Development and Panchayati Raj Department officials claimed that the sequence in which presidencies are reserved for women in the General category is determined by descending lists of the total number of women's seats in each GP. But a visual examination of the reservation history shows that bureaucrats are actually determining reservation based on descending lists of the number of women's seats *in the General category* (GEN-W) in each GP (detailed description on page 24). In this case, lower-level bureaucrats who actually implement the reservation are *not* following the process described by the upper-level bureaucrats who issue guidelines. This implies that any study about reservation in India should ideally verify whether the reservation process described by state officials is actually followed.

In my study, I simulated the process used by bureaucrats to determine reservation for female presidents, and created appropriate descending lists of women's seats for each caste category for each taluk (sub-district). The descending lists did not include GPs reserved for female presidents in the immediately preceding period. Since the lists consisted of all eligible GPs, the reservation history should have shown that the GPs at the top of each list were reserved for women presidents. In most cases, this

was true, and I could be confident that my simulated lists were accurate, such as in the General category example from Honnali Taluk below:

Honnali Taluk		
Gram Panchayat	Number of Women's Seats In General Category	Reserved for Women Presidents?
CHATNAHALLI	2	Yes
KUNKOVA	2	Yes
GOPAGONDANAHALLI	2	Yes
SORATUR	2	Yes
BENAKANAHALLI	2	Yes
YARAGANAL	2	Yes
HOSAHALLI	2	Yes
SOVALANGA	1	No
THIMALAPURA	1	No
CHINNIKATTE	1	No
PALAVANAHALLI	1	No
BANNIKODU	1	No
CHILURKADADAKATTE	1	No
KAMMARAGATTE	0	No

However, in some cases, the descending lists did *not* tally with the actual reservation, as in Karwar Taluk shown below:

Karwar Taluk		
Gram Panchayat	Number of Women's Seats In General Category	Reserved for Women Presidents?
MALLAPUR	4	Yes
GHADASAI	3	No
CHENDIYE	2	No
KADRA	2	No
KINNAR	1	Yes
GOTEGALI	1	No
KERWADI	1	No

In the above example, according to my simulated list, Ghadasai should have been reserved for a woman president, not Kinnar.

In some cases, such discrepancies could be because of missing data. In other cases, the discrepancy could have been because my estimates of the number of women's seats were incorrect. If Kinnar actually had 4 women's seats, rather than 1, then in the example above, bureaucrats would have

been following the process perfectly. In my study, there may be errors because of wrong estimates, but again, these errors should not be correlated with reservation and thus should not bias my results.

But even in the 20 taluks for which I was using actual numbers of seats, and not estimates, I found discrepancies, such as in Tirumakudal-Narsipur Taluk:

Tirumakudal-Narsipur Taluk		
Gram Panchayat	Number of Women's Seats In General Category	Reserved for Women Presidents?
THURUGANURU	3	Yes
B. SEEHALLI	3	Yes
KETHUPURA	3	No
KOTTHEGALA	2	Yes
MALIYURU	1	No
ALGODU	1	No

In this case, Kethupura should have been reserved, not Koththegala. Since in this list the data is complete, and I am using actual data, not estimates, it is unlikely that this is a simulation error. There were several examples of this sort.

In this situation, it is possible that Kethupura lobbied the appropriate bureaucrat in order to prevent a woman president. I find this very unlikely. Reservation is determined by the 29 Deputy Commissioners of each Karnataka district. Deputy Commissioners are powerful officials who head the district administration. They are responsible for law and order, collecting revenue, implementing development activities, all elections in the district, implementing emergency relief, and assorted minor functions²⁸. Determining reservation is a minor duty. On average there are 194 gram panchayats in each district. It seems impossible that any gram panchayat could successfully influence the district Deputy Commissioner and prevent reservation. Moreover, since reservation rotates, reservation can only be delayed, not prevented entirely, so there is little incentive for GPs to invest in lobbying.

Nonetheless, there may be a particular reason that Kethupura was not reserved. I cannot rule out that reservation was not randomly assigned. Thus, for all lists like this in which I found discrepancies, I did not include the GPs in my study.

²⁸"Deputy Commissioner's Office". [Mysore District](http://www.mysore.nic.in/deputycommissioneroffice.htm). Accessed April 1st, 2010. <<http://www.mysore.nic.in/deputycommissioneroffice.htm>>

Appendix B: Rural Development and Panchayati Raj Data Independent T-test Results

Time Period	Type of Performance Indicator	Treatment (Reserved)	Control (Unreserved)	Difference of Means	P-Value
April '05-Sep '05	Number of <i>Gram Panchayat</i> meetings conducted	4.4632 (0.0592)	4.4684 (0.0545)	-0.005 (0.08)	0.9489
April '05-Sep '05	Number of decisions taken at <i>Gram Panchayat</i> meeting	33.8644 (0.9122)	34.4306 (0.8066)	-0.566 (1.215)	0.6413
April '05-Sep '05	Number of <i>Gram Sabha</i> meetings conducted	1.8862 (0.0562)	1.9523 (0.0609)	-0.066 (0.083)	0.4263
April '05-Sep '05	Number of decisions taken at <i>Gram Sabha</i> meeting	20.3632 (1.0086)	19.9945 (0.7315)	0.369 (1.24)	0.7661
April '05-Sep '05	Total number of borewells with handpumps	30.3471 (0.5823)	30.1769 (0.5572)	0.17 (0.806)	0.8327
April '05-Sep '05	Total number of borewells with handpumps not in use	6.3176 (0.229)	6.5227 (0.2391)	-0.205 (0.331)	0.5363
April '05-Sep '05	Maintenance expenditure on borewells with handpumps	18688.8435 (797.0576)	18795.8707 (858.5706)	-107.027 (1173.52)	0.9273
April '05-Sep '05	Total number of mini water supply schemes	5.5059 (0.1892)	5.6757 (0.158)	-0.17 (0.246)	0.4896
April '05-Sep '05	Total number of mini water supply schemes not in use	0.7859 (0.0706)	0.7188 (0.0622)	0.067 (0.094)	0.4754
April '05-Sep '05	Maintenance expenditure on mini water supply schemes	25192.2165 (1121.1351)	28190.2041 (1511.224)	-2997.988 (1892.39)	0.1133
April '05-Sep '05	Total number of piped water supply schemes	6.34 (2.9913)	3.4649 (0.129)	2.875 (2.939)	0.3282
April '05-Sep '05	Total number of piped water supply schemes not in use	0.5071 (0.067)	0.4603 (0.0383)	0.047 (0.076)	0.541
April '05-Sep '05	Maintenance expenditure on piped water supply schemes	32423.3835 (2913.3889)	29013.1746 (1327.181)	3410.209 (3163.458)	0.2812
April '05-Sep '05	Total Expenditure	76592.0988 (3527.4985)	76131.551 (2634.2871)	460.548 (4380.913)	0.9163
April '05-Sep '05	Water Rate: Demand	112533.0906 (7398.9928)	105927.1519 (4035.5275)	6605.939 (8346.057)	0.4288
April '05-Sep '05	Water Rate: Collection	20871.1565 (921.005)	22304.0578 (953.0466)	-1432.901 (1326.638)	0.2802
April '05-Sep '05	Individual latrine achievement	59.3832 (5.3978)	61.1833 (5.2215)	-1.8 (7.508)	0.8106
April '05-Sep '05	Community latrine achievement	0.8204 (0.0797)	0.8619 (0.0956)	-0.042 (0.125)	0.7391
April '05-Sep '05	Demand for Taxes: Previous year's balance	228971.5242 (7326.1138)	238084.3385 (8752.1537)	-9112.814 (11465.87)	0.4269
April '05-Sep '05	Demand for Taxes: Current year's balance	316174.2701 (11512.7354)	332769.7254 (14121.7637)	-16595.46 (18313.91)	0.365
April '05-Sep '05	Demand for Taxes: total balance	545145.7893 (15686.6863)	570854.0639 (18598.8301)	-25708.27 (24437.97)	0.293
April '05-	Collection of taxes: Apr-Sep	81399.1549	86775.7716	-5376.617	0.5473

Sep '05		(5762.7903)	(6776.2517)	(8932.886)	
April '05- Sep '05	Collection of taxes: Oct-Mar	13978.2776 (3071.8028)	11628.2959 (1787.4119)	2349.982 (3515.216)	0.5039
April '05- Sep '05	Collection of taxes: total	95377.4275 (7091.1684)	98404.0675 (7403.1575)	-3026.64 (10266.99)	0.7682
April '05- Sep '05	Net Balance: previous year	189488.2454 (8646.275)	192115.374 (8012.8586)	-2627.129 (11773.92)	0.8235
April '05- Sep '05	Net Balance: current year	253024.347 (9266.1082)	254970.8533 (8850.2682)	-1946.506 (12806.83)	0.8792
April '05- Sep '05	Net Balance: total	442512.575 (14367.8098)	447086.2272 (13958.2026)	-4573.652 (20028.88)	0.8194
Oct '05- Mar '06	Number of <i>Gram Panchayat</i> meetings conducted	4.1703 (0.0643)	4.2935 (0.0774)	-0.123 (0.101)	0.2229
Oct '05- Mar '06	Number of decisions taken at <i>Gram Panchayat</i> meeting	32.6387 (0.8053)	32.0255 (0.827)	0.613 (1.155)	0.5957
Oct '05- Mar '06	Number of <i>Gram Sabha</i> meetings conducted	2.038 (0.0698)	1.948 (0.0637)	0.09 (0.094)	0.3402
Oct '05- Mar '06	Number of decisions taken at <i>Gram Sabha</i> meeting	19.649 (0.7606)	19.3787 (0.8321)	0.27 (1.13)	0.8109
Oct '05- Mar '06	Total number of borewells with handpumps	30.5723 (0.5828)	30.7642 (0.5582)	-0.192 (0.807)	0.8119
Oct '05- Mar '06	Total number of borewells with handpumps not in use	6.1827 (0.2329)	6.594 (0.2396)	-0.411 (0.334)	0.219
Oct '05- Mar '06	Maintenance expenditure on borewells with handpumps	21401.7908 (1020.2873)	21335.2125 (740.475)	66.578 (1253.579)	0.9576
Oct '05- Mar '06	Total number of mini water supply schemes	14.0786 (8.114)	5.7375 (0.1788)	8.341 (7.961)	0.2949
Oct '05- Mar '06	Total number of mini water supply schemes not in use	1.4012 (0.6702)	0.6085 (0.0485)	0.793 (0.659)	0.2294
Oct '05- Mar '06	Maintenance expenditure on mini water supply schemes	26936.8012 (1192.9244)	28939.5406 (1197.4551)	-2002.739 (1691.009)	0.2364
Oct '05- Mar '06	Total number of piped water supply schemes	6.378 (2.9394)	3.634 (0.1708)	2.744 (2.889)	0.3423
Oct '05- Mar '06	Total number of piped water supply schemes not in use	3.3699 (2.942)	0.3826 (0.0319)	2.987 (2.886)	0.3008
Oct '05- Mar '06	Maintenance expenditure on piped water supply schemes	31389.7075 (1321.6662)	32691.5584 (1323.3404)	-1301.851 (1871.044)	0.4867
Oct '05- Mar '06	Total Expenditure	80160.8717 (2707.3142)	82889.4727 (2351.181)	-2728.601 (3577.381)	0.4457
Oct '05- Mar '06	Water Rate: Demand	120429.3006 (5972.0943)	113389.04 (5817.5017)	7040.261 (8336.103)	0.3985
Oct '05- Mar '06	Water Rate: Collection	34681.7272 (1380.6681)	37285.3126 (1741.6802)	-2603.585 (2233.128)	0.2438
Oct '05- Mar '06	Individual latrine achievement	62.2464 (5.6068)	58.86 (4.8374)	3.386 (7.394)	0.647
Oct '05- Mar '06	Community latrine achievement	1.1311 (0.1998)	0.7687 (0.0703)	0.362 (0.21)	0.0845

Oct '05- Mar '06	Demand for Taxes: Previous year's balance	236553.536 (9919.3355)	235331.4737 (9356.6399)	1222.062 (13626.44)	0.9285
Oct '05- Mar '06	Demand for Taxes: Current year's balance	315982.1122 (13186.8126)	335880.3014 (13996.5539)	-19898.19 (19254.79)	0.3016
Oct '05- Mar '06	Demand for Taxes: total balance	552534.451 (20813.538)	571210.6872 (18781.929)	-18676.24 (27994.64)	0.5048
Oct '05- Mar '06	Collection of taxes: Apr-Sep	83471.6765 (8331.5219)	78667.5251 (4595.6258)	4804.151 (9431.769)	0.6106
Oct '05- Mar '06	Collection of taxes: Oct-Mar	125502.3081 (5737.1585)	133285.9646 (6017.9623)	-7783.656 (8323.537)	0.3498
Oct '05- Mar '06	Collection of taxes: total	208972.7556 (12211.4207)	211953.3493 (9867.3527)	-2980.594 (15648.63)	0.849
Oct '05- Mar '06	Net Balance: previous year	155935.464 (6644.9386)	162205.6998 (7541.6217)	-6270.236 (10075.57)	0.5338
Oct '05- Mar '06	Net Balance: current year	189076.4687 (8051.6913)	186854.7135 (7743.2125)	2221.755 (11166.63)	0.8423
Oct '05- Mar '06	Net Balance: total	345010.379 (11636.7767)	349059.3984 (12756.2122)	-4049.019 (17298.11)	0.815
April '06- Sep '06	Number of <i>Gram Panchayat</i> meetings conducted	4.3689 (0.0569)	4.3742 (0.0588)	-0.005 (0.082)	0.9484
April '06- Sep '06	Number of decisions taken at <i>Gram Panchayat</i> meeting	34.5012 (0.8348)	34.0303 (0.8322)	0.471 (1.179)	0.6897
April '06- Sep '06	Number of <i>Gram Sabha</i> meetings conducted	1.7518 (0.0715)	1.6483 (0.0558)	0.103 (0.09)	0.2521
April '06- Sep '06	Number of decisions taken at <i>Gram Sabha</i> meeting	17.9684 (0.6834)	16.7843 (0.5984)	1.184 (0.906)	0.1915
April '06- Sep '06	Total number of borewells with handpumps	30.6861 (0.6058)	30.7324 (0.5627)	-0.046 (0.826)	0.9553
April '06- Sep '06	Total number of borewells with handpumps not in use	6.6112 (0.238)	6.7234 (0.2514)	-0.112 (0.347)	0.7464
April '06- Sep '06	Maintenance expenditure on borewells with handpumps	19767.6076 (717.3593)	18329.4399 (733.3271)	1438.168 (1026.971)	0.1616
April '06- Sep '06	Total number of mini water supply schemes	5.7027 (0.1854)	5.89 (0.1472)	-0.187 (0.236)	0.4266
April '06- Sep '06	Total number of mini water supply schemes not in use	0.7289 (0.0589)	0.6644 (0.0486)	0.064 (0.076)	0.3969
April '06- Sep '06	Maintenance expenditure on mini water supply schemes	25534.0844 (1108.1478)	28860.068 (1574.2979)	-3325.984 (1941.696)	0.0869
April '06- Sep '06	Total number of piped water supply schemes	3.6706 (0.0986)	3.6259 (0.1048)	0.045 (0.144)	0.7561
April '06- Sep '06	Total number of piped water supply schemes not in use	0.4958 (0.0482)	0.4274 (0.0353)	0.068 (0.059)	0.2495
April '06- Sep '06	Maintenance expenditure on piped water supply schemes	31217.1046 (1335.7868)	30640.3923 (1469.3373)	576.712 (1991.381)	0.7722
April '06- Sep '06	Total Expenditure	76518.7967 (2374.7373)	77829.9002 (3125.3496)	-1311.104 (3952.387)	0.7401
April '06-	Water Rate: Demand	153476.9013	160179.432	-6702.531	0.574

Sep '06		(6733.7246)	(9709.4403)	(11920.82)	
April '06- Sep '06	Water Rate: Collection	26548.5351 (1105.0002)	26892.7404 (1119.0763)	-344.205 (1574.056)	0.8269
April '06- Sep '06	Individual latrine achievement	62.1568 (4.6019)	63.372 (5.1168)	-1.215 (6.902)	0.8603
April '06- Sep '06	Community latrine achievement	1.0908 (0.2058)	1.1691 (0.1762)	-0.078 (0.27)	0.7719
April '06- Sep '06	Demand for Taxes: Previous year's balance	313840.7521 (9875.6484)	308195.8677 (10215.1047)	5644.884 (14228.67)	0.6916
April '06- Sep '06	Demand for Taxes: Current year's balance	314579.5401 (12965.6367)	308961.187 (10337.6641)	5618.353 (16501.46)	0.7335
April '06- Sep '06	Demand for Taxes: total balance	628420.2922 (18475.1002)	617157.0547 (16888.3021)	11263.24 (24990.85)	0.6523
April '06- Sep '06	Collection of taxes: Apr-Sep	108227.4635 (7387.2655)	100567.0285 (4952.4287)	7660.435 (8815.761)	0.385
April '06- Sep '06	Collection of taxes: Oct-Mar	5295.1485 (1261.4023)	5761.187 (1201.6643)	-466.039 (1741.138)	0.789
April '06- Sep '06	Collection of taxes: total	113522.612 (7592.9963)	106328.2155 (5179.4545)	7194.396 (9114.155)	0.43
April '06- Sep '06	Net Balance: previous year	255163.6814 (11153.1832)	248258.9795 (11748.8081)	6904.702 (16230.04)	0.6706
April '06- Sep '06	Net Balance: current year	241330.715 (7119.1993)	252392.4698 (9192.9994)	-11061.75 (11705.51)	0.3448
April '06- Sep '06	Net Balance: total	496494.3964 (15187.445)	500651.4493 (16943.2811)	-4157.053 (22828.24)	0.8555
Oct '06- Mar '07	Number of <i>Gram Panchayat</i> meetings conducted	4.9695 (0.1078)	5.0038 (0.0818)	-0.034 (0.135)	0.7991
Oct '06- Mar '07	Number of decisions taken at <i>Gram Panchayat</i> meeting	38.1086 (1.1045)	38.9784 (1.018)	-0.87 (1.5)	0.5621
Oct '06- Mar '07	Number of <i>Gram Sabha</i> meetings conducted	2.0715 (0.1039)	1.9975 (0.168)	0.074 (0.199)	0.7105
Oct '06- Mar '07	Number of decisions taken at <i>Gram Sabha</i> meeting	17.6543 (0.77)	16.6391 (0.703)	1.015 (1.041)	0.3297
Oct '06- Mar '07	Total number of borewells with handpumps	30.7349 (0.6763)	31.4286 (0.7016)	-0.694 (0.975)	0.4771
Oct '06- Mar '07	Total number of borewells with handpumps not in use	6.4388 (0.242)	6.4052 (0.2531)	0.034 (0.351)	0.9237
Oct '06- Mar '07	Maintenance expenditure on borewells with handpumps	24972.9354 (997.8778)	22816.9403 (1219.5181)	2155.995 (1581.811)	0.1731
Oct '06- Mar '07	Total number of mini water supply schemes	5.4913 (0.1666)	7.9779 (2.1688)	-2.487 (2.214)	0.2615
Oct '06- Mar '07	Total number of mini water supply schemes not in use	0.6622 (0.053)	0.574 (0.047)	0.088 (0.071)	0.2124
Oct '06- Mar '07	Maintenance expenditure on mini water supply schemes	31380.7914 (1890.8512)	33489.0922 (1693.7357)	-2108.301 (2534.349)	0.4056
Oct '06- Mar '07	Total number of piped water supply schemes	3.5343 (0.0921)	3.9961 (0.4155)	-0.462 (0.433)	0.2859

Oct '06- Mar '07	Total number of piped water supply schemes not in use	0.3903 (0.0425)	0.3766 (0.038)	0.014 (0.057)	0.8101
Oct '06- Mar '07	Maintenance expenditure on piped water supply schemes	36625.8223 (1692.6725)	36136.7844 (1601.1848)	489.038 (2328.439)	0.8337
Oct '06- Mar '07	Total Expenditure	92979.5491 (3476.0055)	92442.8169 (3329.3034)	536.732 (4811.027)	0.9112
Oct '06- Mar '07	Water Rate: Demand	141415.5612 (5107.083)	143400.3065 (6862.3771)	-1984.745 (8600.684)	0.8175
Oct '06- Mar '07	Water Rate: Collection	43355.498 (1892.4974)	47874.4286 (2135.1624)	-4518.931 (2860.17)	0.1143
Oct '06- Mar '07	Individual latrine achievement	69.0162 (5.4505)	70.674 (6.0581)	-1.658 (8.169)	0.8392
Oct '06- Mar '07	Community latrine achievement	1.0446 (0.1766)	1.0468 (0.1671)	-0.002 (0.243)	0.9929
Oct '06- Mar '07	Demand for Taxes: Previous year's balance	303657.8811 (12572.2735)	289819.3133 (10474.4861)	13838.57 (16315.11)	0.3965
Oct '06- Mar '07	Demand for Taxes: Current year's balance	304403.1577 (12266.574)	323662.4493 (15595.6931)	-19259.29 (19933.97)	0.3341
Oct '06- Mar '07	Demand for Taxes: total balance	608061.0387 (20000.271)	613481.7627 (21305.6437)	-5420.724 (29265.93)	0.8531
Oct '06- Mar '07	Collection of taxes: Apr-Sep	100567.4813 (7027.0943)	101578.3667 (5718.5076)	-1010.885 (9029.094)	0.9109
Oct '06- Mar '07	Collection of taxes: Oct-Mar	137636.8589 (6804.7839)	150167.884 (6986.3456)	-12531.03 (9760.634)	0.1994
Oct '06- Mar '07	Collection of taxes: total	238204.3402 (12937.3999)	251746.0453 (11080.5497)	-13541.71 (16991.57)	0.4256
Oct '06- Mar '07	Net Balance: previous year	206932.0055 (12404.3645)	192002.2413 (9375.9358)	14929.76 (15476.39)	0.3349
Oct '06- Mar '07	Net Balance: current year	182265.0429 (9959.6993)	192132.192 (9051.9613)	-9867.149 (13439.57)	0.463
Oct '06- Mar '07	Net Balance: total	389197.0484 (18105.8726)	384134.4333 (15393.4444)	5062.615 (23702.87)	0.8309

Standard Errors in Parenthesis

* p<0.05, ** p<0.01, *** p<0.001

N=1771, as low as 1473 in some cases

Appendix C: Gram Swaraj Project Fiscal Data Independent T-test Results

Time Period	Type of Financial Indicator	Treatment (Reserved)	Control (Unreserved)	Difference of Means	P-Value
April '05-March '06	Opening Balance	180156.947 (6142.938)	182107.384 (6012.631)	-1950.437 (8595.776)	0.8205
April '05-March '06	Grants in Aid	1391935.454 (24114.702)	1394588.527 (23188.729)	-2653.073 (33442.17)	0.9368
April '05-March '06	Taxes	159923.886 (9817.823)	175863.002 (8895.391)	-15939.12 (13227.43)	0.2284
April '05-March '06	Non-Taxes	85254.175 (6428.241)	90364.665 (6989.569)	-5110.489 (9516.653)	0.5913
April '05-March '06	Total-Own Sources of Revenue	240924.018 (13147.438)	261027.004 (13046.5)	-20102.99 (18527.51)	0.2781
April '05-March '06	Total Revenue	1791931.063 (30528.356)	1810485.72 (30485.709)	-18554.66 (43161.9)	0.6673
April '05-March '06	Expenditure	1405944.431 (24747.983)	1450492.689 (25354.122)	-44548.26 (35460.17)	0.2092
April '05-March '06	Closing Balance	406515.866 (12743.973)	387274.967 (11456.504)	19240.9 (17105.43)	0.2608
April '05-March '06	Property Tax	97287.136 (8549.846)	102517.802 (6780.962)	-5230.666 (10865.74)	0.6303
April '05-March '06	Other Direct Taxes	14578.103 (1260.038)	17327.446 (1972.358)	-2749.343 (2362.296)	0.2446
April '05-March '06	Special Water Tax	31498.285 (1549.059)	34781.594 (1794.252)	-3283.309 (2378.819)	0.1677
April '05-March '06	General Tax	12970.598 (1345.033)	13375.369 (1360.438)	-404.771 (1914.472)	0.8326
April '05-March '06	License Fees	10520.125 (1386.42)	11053.898 (865.216)	-533.773 (1619.69)	0.7418
April '05-March '06	Other Fees	18030.61 (2153.21)	22825.323 (4450.904)	-4794.713 (5013.596)	0.339
April '05-March '06	GP Asset Incomes*	10649.11 (1426.878)	16829.326 (2319.587)	-6180.216* (2748.176)	0.0246
April '05-March '06	Other Non-Tax Revenue	47100.718 (4850.571)	45517.735 (3885.321)	1582.983 (6186.743)	0.7981
April '05-March '06	Grand Total Own Sources	242696.512 (13210.098)	262662.233 (13232.852)	-19965.72 (18706.13)	0.286
April '05-March '06	Grants for Section 206	482672.443 (6134.973)	480573.617 (5781.476)	2098.826 (8423.396)	0.8033
April '05-March '06	Grants for Development	49921.413 (6737.788)	50317.507 (6490.753)	-396.095 (9352.362)	0.9662
April '05-March '06	Grants for Nirmal Karnataka	23142.284 (2026.56)	23838.813 (2561.827)	-696.529 (3282.145)	0.832
April '05-March '06	Grants for Ashraya	6522.069 (2336.672)	12722.404 (3932.715)	-6200.335 (4618.167)	0.1796
April '05-	State Grants Sub-	560618.579	566328.492	-5709.914	0.6529

March '06	total	(8747.616)	(9178.107)	(12695.48)	
April '05- March '06	Grants for Finance	84155.291 (2825.584)	84203.967 (2894.278)	-48.676 (4048.082)	0.9904
April '05- March '06	Grants for IAY	163404.143 (7570.045)	172679.107 (7829.589)	-9274.964 (10901.4)	0.395
April '05- March '06	Grants for MWS	57418.24 (4793.699)	53366.477 (4441.828)	4051.763 (6528.075)	0.5349
April '05- March '06	Grants for SGRY	263163.212 (6405.173)	264716.854 (6498.491)	-1553.642 (9130.168)	0.8649
April '05- March '06	Central Grants Sub- total	567977.406 (13584.417)	574233.993 (13686.214)	-6256.587 (19293.31)	0.7458
April '05- March '06	Grants for SGY	37563.371 (11232.854)	35663.361 (10297.541)	1900.01 (15229.03)	0.9008
April '05- March '06	Grants for MNK	10518.315 (1821.303)	7684.327 (1439.654)	2833.988 (2318.435)	0.2221
April '05- March '06	Grants for Library	5960.016 (779.842)	4845.04 (660.49)	1114.977 (1019.495)	0.2746
April '05- March '06	Grants for Ambedkar	4534.452 (2602.492)	39.544 (39.544)	4494.908 (2582.02)	0.0823
April '05- March '06	Grants for Forest	0 (0)	0 (0)	0 (0)	0
April '05- March '06	Grants for KSG	10580.676 (4861.3)	11078.988 (6040.37)	-498.312 (7771.007)	0.9489
April '05- March '06	Grants for NBN	5497.742 (3772.684)	1282.944 (982.081)	4214.797 (3871.284)	0.2768
April '05- March '06	Grants for Naxal	18625.19 (11146.876)	11691.476 (5421.757)	6933.713 (12334.79)	0.5743
April '05- March '06	Grants for MDM	4225.504 (1248.624)	4555.143 (1386.375)	-329.639 (1867.449)	0.86
April '05- March '06	Grants for Gram Swaraj	589.516 (589.516)	39.444 (39.444)	550.072 (586.159)	0.3485
April '05- March '06	Grants for NREGS	12001.073 (3591.775)	19681.091 (4934.116)	-7680.019 (6118.383)	0.21
April '05- March '06	Grants for Total Sanitation Campaign	25445.603 (3960.598)	35039.488 (4433.74)	-9593.885 (5952.416)	0.1076
April '05- March '06	Grants for Swajala	19133.859 (9182.39)	25629.81 (8380.568)	-6495.951 (12423.54)	0.6013
April '05- March '06	Grants for Water Development	4898.645 (2211.6)	3310.952 (2193.422)	1587.693 (3114.841)	0.6105
April '05- March '06	Grants for CONEDU	10160.355 (2375.928)	9282.187 (1188.275)	878.168 (2643.874)	0.7399
April '05- March '06	Grants for SGSY	29980.292 (4851.702)	33935.802 (4833.128)	-3955.511 (6848.323)	0.5638
April '05- March '06	Grants for PMGY	16775.641 (4116.807)	25535.079 (8507.748)	-8759.438 (9498.953)	0.3569
April '05-	Grants for JNirmal	2069.508	358.266 (358.266)	1711.242	0.4032

March '06		(2029.423)		(2045.356)	
April '05- March '06	Grants for JRak	3765.508 (2549.199)	3621.327 (1733.195)	144.181 (3075.868)	0.9626
April '05- March '06	Grants for Bharat Nirman	9545.359 (6408.258)	143.468 (104.252)	9401.891 (6357.962)	0.1398
April '05- March '06	Grants for Drinking Water Maintenance	23981.891 (4767.444)	26936.234 (7906.829)	-2954.343 (9267.974)	0.75
April '05- March '06	Sub Total Other Grants	22556.931 (3551.501)	29448.488 (5088.199)	-6891.557 (6222.599)	0.2686
April '05- March '06	Sub Total All Grants	274691.39 (13516.116)	272343.913 (12438.397)	2347.477 (18346.34)	0.8982
April '05- March '06	Grand Total Revenue	1403287.375 (24279.722)	1414175.1 (23354.063)	-10887.72 (33675.82)	0.7465
April '05- March '06	Expenditure on Administration*	149233.595 (4233.912)	162353.575 (4835.849)	-13119.98* (6445.805)	0.042
April '05- March '06	Expenditure on Public Protection	117455.167 (3886.516)	126024.463 (4857.187)	-8569.296 (6247.613)	0.1704
April '05- March '06	Expenditure on Development	96218.296 (7723.905)	103275.593 (6825.023)	-7057.297 (10287.15)	0.4928
April '05- March '06	Expenditure on Public Health	25176.767 (1870.273)	24353.896 (1690.383)	822.871 (2516.385)	0.7437
April '05- March '06	Expenditure on Civic Amenities	181681.038 (6546.108)	186656.854 (7238.913)	-4975.816 (9781.007)	0.611
April '05- March '06	Expenditure on Education	4393.881 (523.552)	5424.607 (639.085)	-1030.727 (829.297)	0.2141
April '05- March '06	Expenditure on Advances	14396.383 (1880.72)	15774.86 (2714.302)	-1378.477 (3327.404)	0.6787
April '05- March '06	Expenditure on Finance	43834.493 (2993.644)	47289.945 (3005.023)	-3455.452 (4242.786)	0.4155
April '05- March '06	Expenditure on Development	104929.526 (7643.115)	92665.654 (6534.163)	12263.87 (10028.26)	0.2215
April '05- March '06	Expenditure on Nirmal Karnataka	14115.076 (1525.211)	16873.169 (2026.184)	-2758.092 (2551.607)	0.2799
April '05- March '06	Expenditure on IAY	156176.831 (6936.035)	173972.252 (8993.766)	-17795.42 (11422.34)	0.1194
April '05- March '06	Expenditure on Rural Water Supply	48525.051 (3344.936)	55493.151 (5495.664)	-6968.101 (6500.202)	0.2839
April '05- March '06	Expenditure on Ashraya	9667.848 (2546.395)	12549.437 (3940.47)	-2881.59 (4737.517)	0.5431
April '05- March '06	Expenditure on SGRY	276243.091 (7029.355)	274756.351 (6604.385)	1486.74 (9636.741)	0.8774
April '05- March '06	Expenditure on SGY	25706.486 (8019.242)	33088.221 (9375.99)	-7381.736 (12362.4)	0.5507
April '05- March '06	Expenditure on MNK	7595.826 (1892.736)	11057.842 (3780.899)	-3462.016 (4259.163)	0.4167
April '05- March '06	Expenditure on Library	2470.453 (325.219)	2703.413 (383.312)	-232.96 (503.942)	0.6441

April '05-March '06	Expenditure on Ambedkar	0 (0)	4.091 (3.954)	-4.091 (4.002)	0.3072
April '05-March '06	Expenditure on Forest	959.514 (959.514)	0 (0)	959.514 (948.045)	0.312
April '05-March '06	Expenditure on KSG	859.413 (499.564)	4615.735 (2673.121)	-3756.322 (2750.116)	0.1726
April '05-March '06	Expenditure on NBN	1403.907 (977.932)	2895.348 (1895.996)	-1491.441 (2148.47)	0.4879
April '05-March '06	Expenditure on Naxal	5395.215 (4967.135)	1080.885 (564.068)	4314.329 (4940.856)	0.383
April '05-March '06	Expenditure on MDM	3810.271 (1301.38)	5237.423 (1482.354)	-1427.152 (1975.906)	0.4705
April '05-March '06	Expenditure on Gram Swaraj	0 (0)	2647.075 (1856.505)	-2647.075 (1878.963)	0.1595
April '05-March '06	Expenditure on NREGS	308.591 (240.855)	2120.051 (1899.732)	-1811.46 (1937.385)	0.3502
April '05-March '06	Expenditure on Total Sanitation Campaign	9360.955 (1669.222)	15449.348 (2939.52)	-6088.392 (3401.645)	0.0741
April '05-March '06	Expenditure on Swajala	12393.943 (7079.469)	18281.241 (7179.681)	-5887.298 (10086.15)	0.5597
April '05-March '06	Expenditure on Water Development	3693.279 (1869.418)	1793.514 (1464.447)	1899.766 (2368.224)	0.4228
April '05-March '06	Expenditure on CONEDU	6846.765 (856.019)	7901.435 (1367.717)	-1054.67 (1622.201)	0.5159
April '05-March '06	Expenditure on SGSY	16630.697 (3285.171)	24928.057 (4030.934)	-8297.36 (5206.773)	0.1117
April '05-March '06	Expenditure on PMGY	19952.559 (4241.335)	21016.032 (4061.432)	-1063.473 (5870.11)	0.8563
April '05-March '06	Expenditure on JNirmal	2447.368 (2064.773)	1284.585 (1284.585)	1162.783 (2419.153)	0.631
April '05-March '06	Expenditure on JRak	2855.121 (1999.656)	4669.96 (2407.038)	-1814.839 (3136.632)	0.5631
April '05-March '06	Expenditure on Bharat Nirman	2831.765 (1400.66)	483.451 (218.477)	2348.315 (1401.472)	0.0944
April '05-March '06	Expenditure on Rural Water	438.193 (217.611)	1620.215 (1215.259)	-1182.023 (1251.136)	0.3452
April '05-March '06	Expenditure on Other Non-named Schemes	16417.355 (3992.559)	10904.202 (2318.63)	5513.153 (4594.509)	0.2307
April '05-March '06	Expenditure on All Other Schemes	155971.961 (8850.985)	169759.663 (8980.632)	-13787.7 (12616.15)	0.2746
April '05-March '06	Grand Total of Expenditure*	1393919.955 (24726.02)	1473709.99 (26847.542)	-79790.04* (36562.85)	0.0292
April '06-March '07	Opening Balance	409759.789 (11641.589)	414835.966 (29846.836)	-5076.178 (32532.52)	0.876
April '06-March '07	Grants in Aid	2372704.342	2461505.531	-88801.19	0.2623

		(52566.17)	(58934.472)	(79189.88)	
April '06-March '07	Taxes	189976.057 (13352.851)	189739.128 (12384.459)	236.929 (18191.42)	0.9896
April '06-March '07	Non-Taxes	95426.844 (7884.52)	108407.984 (6613.723)	-12981.14 (10258.53)	0.2059
April '06-March '07	Total-Own Sources of Revenue	285399.65 (17469.902)	298133.096 (15943.359)	-12733.45 (23616.95)	0.5898
April '06-March '07	Total Revenue	3071397.872 (60216.5979999999)	3178981.908 (75660.072)	-107584 (97184.97)	0.2684
April '06-March '07	Expenditure	2267515.322 (50390.986)	2334511.049 (52856.611)	-66995.73 (73130.65)	0.3597
April '06-March '07	Closing Balance	803882.55 (22629.29)	844470.859 (37707.022)	-40588.31 (44418.97)	0.361
April '06-March '07	Property Tax	119688.045 (11539.166)	109218.037 (6099.275)	10470.01 (12905.15)	0.4173
April '06-March '07	Other Direct Taxes	15700.627 (2038.471)	21452.303 (7080.442)	-5751.676 (7498.62)	0.4432
April '06-March '07	Special Water Tax	33360.864 (1809.202)	37355.853 (1876.406)	-3994.989 (2609.615)	0.126
April '06-March '07	General Tax	21368.553 (2513.262)	21818.367 (2847.964)	-449.814 (3809.004)	0.906
April '06-March '07	License Fees	12580.336 (2526.135)	13065.818 (1325.442)	-485.482 (2820.361)	0.8634
April '06-March '07	Other Fees	14286.491 (1648.061)	17425.939 (1820.659)	-3139.448 (2461.849)	0.2024
April '06-March '07	GP Asset Incomes*	11375.58 (1562.444)	17484.365 (2454.088)	-6108.785* (2937.336)	0.0377
April '06-March '07	Other Non-Tax Revenue	57115.143 (6195.677)	60421.939 (4651.136)	-3306.796 (7705.832)	0.6679
April '06-March '07	Grand Total Own Sources	285399.65 (17469.902)	298133.107 (15943.359)	-12733.46 (23616.95)	0.5898
April '06-March '07	Grants for Section 206	488953.579 (6536.286)	495382.781 (6839.298)	-6429.202 (9473.696)	0.4975
April '06-March '07	Grants for Development	34597.721 (5446.139)	39153.749 (9501.685)	-4556.027 (11066.82)	0.6806
April '06-March '07	Grants for Nirmal Karnataka	23687.806 (4711.804)	20458.052 (3841.855)	3229.754 (6057.221)	0.594
April '06-March '07	Grants for Ashraya	271980.098 (10622.32)	258577.809 (10378.589)	13402.29 (14849.95)	0.3669
April '06-March '07	State Grants Sub-total	817790.78 (15397.561)	812440.26 (17209.269)	5350.52 (23154.51)	0.8173
April '06-March '07	Grants for Finance	213019.91 (5132.31)	214364.705 (5255.313)	-1344.795 (7352.658)	0.8549
April '06-March '07	Grants for IAY	159655.001 (7800.245)	157235.939 (7513.966)	2419.062 (10826.96)	0.8232
April '06-	Grants for MWS	105169.941	111316.94	-6146.999	0.5806

March '07		(7919.436)	(7809.256)	(11124)	
April '06- March '07	Grants for SGRY	191636.937 (6977.441)	190924.035 (5757.118)	712.902 (9013.523)	0.937
April '06- March '07	Central Grants Sub- total	667415.961 (18251.068)	672713.775 (17021.541)	-5297.814 (24931.41)	0.8317
April '06- March '07	Grants for SGY	95300.969 (25010.925)	89320.342 (19211.188)	5980.626 (31446.58)	0.8492
April '06- March '07	Grants for MNK	16826.219 (3906.968)	17181.422 (4623.387)	-355.203 (6068.151)	0.9533
April '06- March '07	Grants for Library	5169.213 (516.16)	4906.358 (537.041)	262.855 (745.526)	0.7246
April '06- March '07	Grants for Ambedkar	57992.937 (15616.381)	37309.119 (9938.998)	20683.82 (18421.57)	0.262
April '06- March '07	Grants for Forest*	3744.213 (828.935)	1479.631 (520.433)	2264.582* (973.913)	0.0204
April '06- March '07	Grants for KSG	17383.575 (9341.511)	17328.088 (9662.916)	55.486 (13447.23)	0.9967
April '06- March '07	Grants for NBN	14316.094 (5327.235)	22106.531 (7385.118)	-7790.436 (9140.792)	0.3945
April '06- March '07	Grants for Naxal	35423.524 (15750.697)	24845.335 (10463.103)	10578.19 (18825.94)	0.5744
April '06- March '07	Grants for MDM	0 (0)	0 (0)	0 (0)	0
April '06- March '07	Grants for Gram Swaraj	215314.925 (19370.384)	230221.39 (18079.884)	-14906.46 (26481.76)	0.5738
April '06- March '07	Grants for NREGS	698083.909 (65650.722)	841765.281 (85285.267)	-143681.4 (107963.4)	0.1838
April '06- March '07	Grants for Total Sanitation Campaign	56704.075 (10186.335)	60811.988 (11275.465)	-4107.914 (15215.37)	0.7873
April '06- March '07	Grants for Swajala	14362.171 (5615.407)	24791.342 (9931.459)	-10429.17 (11503.56)	0.365
April '06- March '07	Grants for Water Development	2835.193 (1456.931)	8910.912 (3939.58)	-6075.719 (4238.065)	0.1523
April '06- March '07	Grants for CONEDU	8957.819 (1929.631)	8719.662 (1048.951)	238.157 (2182.595)	0.9132
April '06- March '07	Grants for SGSY	36673.097 (5825.064)	42444.578 (7883.398)	-5771.481 (9825.782)	0.5572
April '06- March '07	Grants for PMGY	4983.76 (2921.102)	5157.181 (2359.294)	-173.421 (3746.138)	0.9631
April '06- March '07	Grants for JNirmal	4588.697 (4588.697)	1989.6 (1633.367)	2599.097 (4827.04)	0.5905
April '06- March '07	Grants for JRak	1962.323 (1598.297)	403.715 (403.715)	1558.607 (1631.665)	0.3399
April '06- March '07	Grants for Bharat Nirman	53876.913 (13914.496)	68396.492 (13596.019)	-14519.58 (19451.56)	0.4557
April '06-	Grants for Drinking	40885.553	49517.4	-8631.847	0.3267

March '07	Water Maintenance	(4682.742)	(7405.912)	(8793.047)	
April '06- March '07	Sub Total Other Grants	54861.583 (13551.828)	53875.008 (12644.224)	986.575 (18522.04)	0.9575
April '06- March '07	Sub Total All Grants	887497.601 (41630.607)	978485.598 (48952.665)	-90988 (64486.46)	0.1584
April '06- March '07	Grand Total Revenue	2372704.342 (52566.17)	2461505.531 (58934.472)	-88801.19 (79189.88)	0.2623
April '06- March '07	Expenditure on Administration	174366.17 (5800.188)	185252.173 (5472.826)	-10886 (7968.43)	0.1721
April '06- March '07	Expenditure on Public Protection	114359.201 (4537.548)	117130.293 (4351.624)	-2771.092 (6284.218)	0.6593
April '06- March '07	Expenditure on Development	153861.219 (13637.382)	195448.529 (20715.939)	-41587.31 (25013.48)	0.0966
April '06- March '07	Expenditure on Public Health	39048.821 (2674.08)	34145.722999999 9 (2091.206)	4903.098 (3378.449)	0.1469
April '06- March '07	Expenditure on Civic Amenities	200919.674 (7258.507)	211386.527 (7850.652)	-10466.85 (10713.75)	0.3287
April '06- March '07	Expenditure on Education	4149.042 (519.936)	5599.488 (931.601)	-1450.446 (1079.526)	0.1793
April '06- March '07	Expenditure on Advances	18853.863 (2588.924)	17765.67 (2026.115)	1088.193 (3272.519)	0.7395
April '06- March '07	Expenditure on Finance	177500.082 (5292.844)	181936.836 (5123.727)	-4436.754 (7364.796)	0.547
April '06- March '07	Expenditure on Development	141692.524 (8468.222)	134194.367 (8902.25)	7498.157 (12307.13)	0.5424
April '06- March '07	Expenditure on Nirmal Karnataka	19818.131 (3088.204)	15368.161 (1996.699)	4449.97 (3644.963)	0.2223
April '06- March '07	Expenditure on IAY	146005.183 (7382.109)	141694.345 (6937.745)	4310.838 (10121.88)	0.6702
April '06- March '07	Expenditure on Rural Water Supply	81897.759 (5629.37)	86894.256 (5964.433)	-4996.497 (8214.711)	0.5431
April '06- March '07	Expenditure on Ashraya	167221.737 (7003.591)	164494.674 (6949.487)	2727.063 (9868.524)	0.7823
April '06- March '07	Expenditure on SGRY	197202.252 (6994.464)	193038.971 (5730.738)	4163.281 (9007.832)	0.644
April '06- March '07	Expenditure on SGY	48016.252 (12460.791)	44134.969 (13460.773)	3881.283 (18361.97)	0.8327
April '06- March '07	Expenditure on MNK	10290.988 (2596.713)	10240.473 (2251.634)	50.515 (3431.743)	0.9883
April '06- March '07	Expenditure on Library	4695.793 (497.93)	3715.44 (441.584)	980.353 (664.681)	0.1409
April '06- March '07	Expenditure on Ambedkar	385.394 (348.102)	5455.146 (4652.293)	-5069.752 (4719.584)	0.2832
April '06- March '07	Expenditure on Forest*	1801.362 (500.018)	468.331 (196.882)	1333.031* (532.839)	0.0127
April '06- March '07	Expenditure on KSG	22991.22 (10134.634)	10739.708 (5770.245)	12251.51 (11593.95)	0.2911

April '06-March '07	Expenditure on NBN	6116.035 (2756.949)	10792.904 (4677.445)	-4676.868 (5460.892)	0.3922
April '06-March '07	Expenditure on Naxal	25833.953 (12951.86)	17959.638 (7842.657)	7874.314 (15061.04)	0.6013
April '06-March '07	Expenditure on MDM	0 (0)	0 (0)	0 (0)	0
April '06-March '07	Expenditure on Gram Swaraj	3385.197 (2015.72)	5583.112 (2337.281)	-2197.915 (3091.143)	0.4774
April '06-March '07	Expenditure on NREGS	504876.276 (53880.631)	507866.935 (55394.706)	-2990.659 (77312.34)	0.9692
April '06-March '07	Expenditure on Total Sanitation Campaign	54018.961 (9949.785)	62776.815 (10446.096)	-8757.855 (14436.51)	0.5444
April '06-March '07	Expenditure on Swajala	22770.969 (11315.233)	22793.092 (10485.266)	-22.124 (15414.83)	0.9989
April '06-March '07	Expenditure on Water Development	4863.846 (2128.456)	3430.892 (1542.081)	1432.954 (2619.136)	0.5845
April '06-March '07	Expenditure on CONEDU	7294.774 (1133.273)	9334.673 (2047.873)	-2039.899 (2360.486)	0.3879
April '06-March '07	Expenditure on SGSY	32635.411 (6236.185)	36508.084 (7764.58)	-3872.673 (9981.497)	0.6982
April '06-March '07	Expenditure on PMGY	6457.961 (2650.861)	6050.958 (2061.026)	407.003 (3348.575)	0.9033
April '06-March '07	Expenditure on JNirmal	161.429 (161.429)	1116.196 (788.196)	-954.767 (813.274)	0.2409
April '06-March '07	Expenditure on JRak	2358.268 (1756.152)	858.688 (615.135)	1499.579 (1843.937)	0.4165
April '06-March '07	Expenditure on Bharat Nirman	26945.78 (7895.927)	30675.162 (7620.2)	-3729.382 (10970.23)	0.734
April '06-March '07	Expenditure on Rural Water	467.287 (377.23)	4210.808 (2150.592)	-3743.52 (2207.606)	0.0905
April '06-March '07	Expenditure on Other Non-named Schemes	72966.874 (18423.447)	76213.069 (16399.731)	-3246.195 (24635.18)	0.8952
April '06-March '07	Expenditure on All Other Schemes	628395.17 (36375.877)	645732.112 (38022.232)	-17351.12 (52694.49)	0.742
April '06-March '07	Grand Total of Expenditure	2267515.323 (50390.986)	2334511.049 (52856.611)	-66995.73 (73130.65)	0.3597

Standard Errors in Parenthesis

* p<0.05, ** p<0.01, *** p<0.001

N=1784, as low as 1,777 in some cases, and as low as 496 variables that were only available in Gram Swaraj Project districts.