

Educational Qualifications of Village Leaders in North India: Implications for Public Service Delivery



Panchayat officials inspect technical specifications at MGNREGS worksite in Bihar, 2013

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Cover photo: MGNREGS audit in Bihar, July 2013. Author's photo.

Executive Summary

Over the last two decades, village governments (gram panchayats or “GPs”) in India have become increasingly responsible for delivering public services to citizens. However, local government capacity in rural North India has been undermined by the high incidence of uneducated village leaders (“sarpanch”). In three districts of Rajasthan, for instance, 94% of sarpanch do not have a college degree, 83% do not have a high school degree, and 45% are unable to read a simple paragraph written at the 2nd grade level in the local language.

Since sarpanch play a key role in managing government programs, the lack of adequate qualifications has resulted in sub-standard public service delivery. GPs with uneducated sarpanch receive fewer benefits and experience more delays in large development programs like MGNREGS. These programs may be more susceptible to political capture when leaders have less education. Development outcomes like literacy rates grow more slowly in GPs with uneducated sarpanch. The poorest GPs are the most adversely affected by uneducated leaders.

This policy analysis presents a dynamic supply-and-demand framework for understanding the possible factors that have contributed to the high incidence of uneducated sarpanch. Three interconnected factors are identified as most likely driving the problem: (1) a lack of incentives for educated villagers to contest elections, especially due to few career options and social norms; (2) voters undervaluing the returns to having an educated sarpanch; and (3) low educational attainment of minority groups in GPs with gender or caste quotas.

In order to take full advantage of feedback loops between candidate and voter behavior, this diagnosis suggests that the client should pursue a multi-pronged strategy. Four policy tools are recommended from a catalog of options based on technical, political and administrative considerations: (1) career incentives for former sarpanch (2) increased monitoring of GP finances; (3) voter awareness campaigns via street theater; and (4) specialized training for sarpanch in reserved GPs. An implementation plan is presented for two alternative scenarios, universal scale-up and targeted scale-up, which could be funded by a 2.3-4.9% increase in the client’s annual expenditures.

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I. Introduction

Since the formalization of the panchayati raj in the 73rd and 74th Amendments in 1993, local village governments in India have become increasingly responsible for delivering public services to citizens. In rural North India, decentralization has involved a tradeoff between incorporating local beneficiary preferences into program design and devolving program management to elected officials who often have minimal administrative or educational qualifications. While Charles Tiebout's model of inter-jurisdictional competition suggests that citizens can "vote with their feet" if they are unhappy with public service delivery in their constituency, traditions and social norms in villages restrict mobility. As India further decentralizes public service delivery, it is therefore critical that all village governments have sufficient capacity to meet the needs and preferences of their constituents. This starts with ensuring that all local governments have competent leaders.

This policy analysis has been prepared for the Ministry of Panchayati Raj (MoPR), which is committed to "Empowerment, enablement and accountability of local governments to ensure inclusive development with social justice, and efficient delivery of services."¹ The author is responding to the MoPR's recent call for consultants to identify next steps for how the ministry can strengthen the capacity of local governments in North India.²

II. Defining the problem: The incidence and consequence of uneducated sarpanch

A. The incidence of uneducated sarpanch in North India

Recent policy briefs and media reports have identified the lack of educated sarpanch³ as a key constraint to efficient administration in local governments in North India.⁴ Data on sarpanch education show that the problem is pervasive:⁵

¹ Vision and Mission, MoPR (2013), [URL](#)

² Engagement of Consultants, MoPR (2013), [URL](#)

³ By "sarpanch" I mean the directly-elected head of the Gram Panchayat. In some states the sarpanch is referred to as the "pradhan" or the "mukhiya".

⁴ Ghosh and Gupta (2009); The Indian Express (2010), [URL](#)

⁵ See **Appendix 1** for a description of all datasets used in this policy analysis

Table 1: Educational qualifications of sarpanch in North India

	Percent of Sarpanch Who:		
	Are Illiterate	Do Not Have A High School Degree	Do Not Have A College Degree
Uttar Pradesh, all districts (Census of sarpanch, 2005)	10.3%	75.6%	88.5%
Rajasthan, all districts (Census of sarpanch, 2011)	9.6%	77.2%	91.4%

Table 1 uses data compiled by the State Election Commissions (SECs) of Uttar Pradesh and Rajasthan, which are aggregated from affidavits filed by candidates when they declare their candidacy. According to these data, only 10% of sarpanch have a college degree, and fully 10% of sarpanch cannot read at all.

Yet these data likely underestimate the problem. Whereas SEC data on three districts in Rajasthan finds that 28.2% of sarpanch are illiterate, data from a survey of sarpanch conducted by the Abdul Latif Jameel Poverty Action Lab (J-PAL) in the same three districts finds that 45.2% of sarpanch are unable to read a simple paragraph written at the 2nd grade level in the local language.⁶ The actual incidence of illiteracy among sarpanch in these three districts is 60% higher than reported in the official statistics.

One explanation for the disparity between the official and actual incidence of illiteracy may be self-reporting bias: candidates inflate their qualifications in the affidavits that they submit to the SEC. Another explanation may be oversimplifying assumptions on the part of the SEC: the SEC categorizes anyone with primary school or more educational attainment as literate. However, the survey data show that 20% of sarpanch who went to school cannot read, and 33% of sarpanch who stopped after primary school are illiterate. Hence, the problem of uneducated sarpanch, already evident in official records, is likely far worse than currently estimated by the MoPR.

Sarpanch do not come from the most educated cross-section of the population. In the three survey districts in Rajasthan, illiteracy according to Census statistics is 28.2% among sarpanch

⁶ See **Appendix 2** for an explanation of how survey estimates were calculated.

and 31.2% among adult citizens.⁷ The methodologies used by the SEC and the Census to measure literacy are similar,⁸ and thus comparisons between the two datasets are valid, though equally prone to self-reporting bias. To obtain more accurate estimates of citizen illiteracy, I use data from a J-PAL survey of 10,088 adult citizens in the same three districts of Rajasthan. This survey implemented the same literacy test as used in the sarpanch survey.

Table 2: Educational qualifications of citizens versus sarpanch in Rajasthan

	Percent of Citizens/Sarpanch Who:		
	Are Illiterate	Do Not Have A High School Degree	Do Not Have A College Degree
Household survey (Survey, 2010)	56.9%	84.2%	94.4%
Sarpanch survey (For literacy: Survey, 2011 For degree: Census of sarpanch, 2011)	45.2%	83.2%	94.0%

Although a slightly smaller fraction of sarpanch are illiterate than citizens in these three districts, approximately the same fraction have high school and college degrees. Voters are electing leaders to manage large development projects and complex financial records that do not have sufficient educational qualifications.

B. Sarpanch responsibilities and necessary qualifications

Sarpanch play a key role in local public service delivery. In a sample of villagers from 50 GPs in Bihar, 88.7% of respondents identified the sarpanch as the sole decision maker for matters pertaining to GP functioning.⁹ **Box 1** lists some of the responsibilities of sarpanch:

Box 1: Sarpanch responsibilities from the Panchayati Raj Act of 2006

- Project planning and budgeting
- Maintenance of financial records and the GP's annual plan
- Maintenance of beneficiary lists
- Maintenance of essential statistics of the GP
- Presiding over meetings of the Gram Sabha (village meetings)

Theoretically, the effect of sarpanch education on public service delivery is ambiguous. On the one hand, sarpanch may need basic qualifications in order to effectively fulfill their

⁷ *ibid.*

⁸ Sharma and Haub (2008), [URL](#)

⁹ Ghosh and Gupta (2009), p. 41

responsibilities. Policy analysts at the Asian Development Research Institute have found that, “The poor educational background of the elected panchayat functionaries is often mentioned as one of the main factors behind poor functioning of GPs.”¹⁰ On the other hand, it may be important for the sarpanch to come from the demographic group that represents the majority of her constituents, so that she would better understand the needs of the GP. Based on **Table 2**, this suggests that the incidence of uneducated sarpanch should be even higher than it is currently.

In the next section, I show that the first effect dominates the second effect: more educated sarpanch deliver public services more effectively than less educated sarpanch. At the same time, sarpanch from minority groups, which tend to have lower educational attainment, deliver public services more effectively to minority groups. Therefore, in the recommendations section, I argue that the MoPR should incentivize more educated villagers to run, but at the same time provide additional administrative support to sarpanch from minority groups.

C. Quantifying the impact of sarpanch education on development outcomes

Leader quality matters for economic development. At the country-level, Jones and Olken (2005) show that an exogenous change in leadership in autocracies (due to natural or accidental death) has a significant effect on economic growth: a one standard deviation increase in leader quality leads to a 2.1 percentage point increase in annual growth.¹¹ In particular, a leader’s education matters for growth in democracies: Besley et al (2011) show that replacing an educated leader with a less educated leader causes annual growth to fall by 1.7 percentage points.¹²

In village governments in India, where the sarpanch has few resources and staff available to assist her in the day-to-day administration of the GP, leader quality has an arguably more direct impact on development outcomes and public service delivery than at the national level. Several studies have shown that leader characteristics determine the mix of public goods that a jurisdiction receives in India. Chattopadhyay and Duflo (2004) find that female sarpanch prioritize public goods that matter for women (like drinking water). Pande (2003) finds that legislator caste

¹⁰ Ghosh and Gupta (2009), p. 26

¹¹ Jones and Olken (2005), p. 856

¹² Besley et al (2011), p. 216

affects the size of transfers to programs for minority groups. Recent research from Novosad and Asher (2012) finds that leader type has a significant effect on employment and growth.

While policy reports have identified a correlation between leader quality and functionality of village governments in North India,¹³ there is little causal evidence that links sarpanch educational qualifications to development outcomes. In the following analysis, I quantify the impact that sarpanch education has on three GP-level indicators that play important roles in economic development: educational attainment, the quality of management of government programs, and the misuse of political influence for private gain.

In this analysis, I use whether the sarpanch completed high school as my indicator of education. This indicator is used for three reasons. First, data on sarpanch educational attainment appears to be more reliable, or at least more consistent, than data on literacy: whereas the incidence of illiteracy is 60% higher in survey data than in SEC data, the likelihood of having a high school degree is comparable across the two datasets. Second, it is more theoretically compelling that a high school education would enable a sarpanch to better manage development programs than simply being literate: whereas a sarpanch may have learned some accounting in high school, it is unlikely that a literate sarpanch without formal education would be able to assemble a budget more effectively than an illiterate sarpanch. Finally, the use of high school as an indicator of education is consistent with other studies done in a similar context (e.g. Ghosh et al 2010).

Sarpanch education and GP educational attainment

One of the most direct ways that sarpanch education can affect local development is through village educational outcomes. A more educated sarpanch may prioritize educational policies and programs in her GP's development agenda. One college-educated sarpanch said, "Whether it is the men, women or children of the village, if they are educated, they will learn to fight for what is right and if they know to read and write, [there is] little chance of them being taken for a ride."¹⁴ A more educated sarpanch may also be a model to citizens to increase their own educational attainment. Since the sarpanch is one of the most visible individuals in the village,

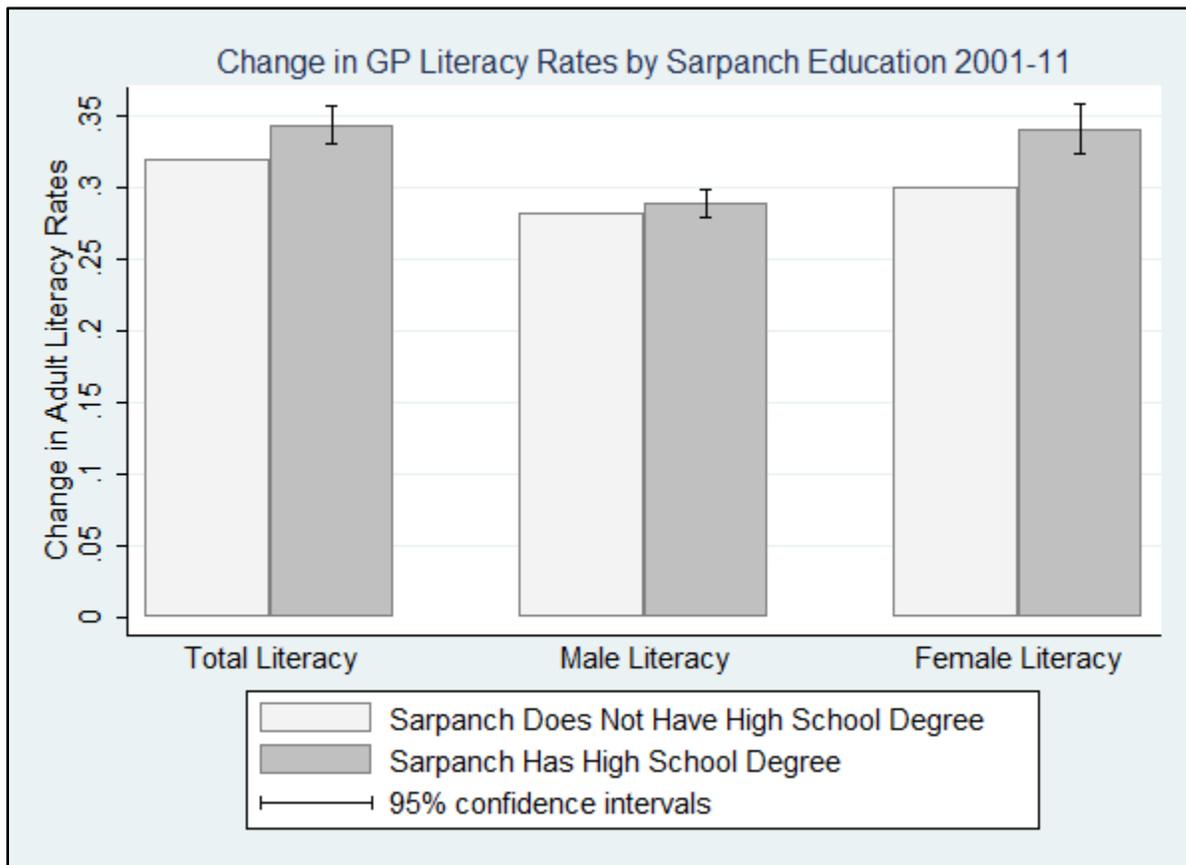
¹³ Ghosh and Gupta (2009), Ghosh et al (2010)

¹⁴ Pagalguy.com (2012), [URL](#)

her example is emulated by her supporters. If the sarpanch prioritizes education in her household, then villagers might be “nudged” to educate their own children.

Using data on sarpanch educational attainments and GP-level literacy rates in Rajasthan, I test the hypothesis that having a more educated sarpanch leads to better educational outcomes in the GP. In order to account for initial GP conditions in my analysis,¹⁵ I compare the change in literacy rates from 2001 to 2011 in GPs that elected an educated sarpanch with GPs that elected an uneducated sarpanch. I provide the full regression tables in **Appendix 3**. **Figure 1** presents my results:

Figure 1: Effect of sarpanch education on GP literacy rates



¹⁵ A simple comparison of 2011 literacy rates in GPs that elected an educated sarpanch versus GPs that elected an uneducated sarpanch would not yield an accurate estimate of the impact of having an educated sarpanch, since this comparison does not account for initial GP conditions, which could affect the likelihood of having an educated sarpanch. For instance, it may be that more educated GPs elect more educated sarpanch, and that GP-level differences in educational outcomes persist over time. In this scenario, I would find that GPs that elected an educated sarpanch have higher literacy rates, but the difference would not be due to sarpanch characteristics.

On average, GPs that elected an educated sarpanch in 2005 had 2.4 percentage points (or 7.5%) higher growth in literacy rates than GPs that elected an uneducated sarpanch. The probability that this finding is due to random chance, and that the two types of GPs actually have the same growth in literacy rates, is less than 1%.

Moreover, the relationship between sarpanch education and literacy appears to be almost entirely driven by growth in female literacy: whereas male literacy increased similarly in all GPs, female literacy increased 4 percentage points (13.3%) faster in GPs with educated sarpanch.

This difference may in part be explained by the fact that there was simply more room for female literacy to grow in these GPs: male literacy in 2001 was 61.3%, whereas female literacy was only 31.0%. Another reason may have to do with where the gains in literacy are concentrated. GPs with educated sarpanch that were reserved for female sarpanch (1/3 of all GPs) had especially large literacy gains: 3.5 percentage points greater than literacy gains in unreserved GPs with educated sarpanch. The gains in these reserved GPs were almost exclusively driven by growth in female literacy: growth in female literacy was 4.8 percentage points greater in reserved GPs that elected an educated sarpanch than in unreserved GPs that elected an educated sarpanch. There are many channels through which an educated female sarpanch may affect female literacy more than male literacy, such as female sarpanch' policy preferences and the effects of female role models on the aspirations of women. Hence, the differential responsiveness of male and female literacy to sarpanch education appears to be, at least in part, explained by the fact that literacy gains are concentrated in GPs with female leaders, where shifts in policy preferences and social norms may have encouraged reductions in gender biases in educational attainment.

Figure 1 presents strong evidence that sarpanch education can affect GP-level educational outcomes. However, it depends on the “parallel trends” assumption that GPs that elected educated sarpanch would have had a similar increase in literacy rates (though not the same levels of literacy) as other GPs had they not elected educated sarpanch. There may be various reasons why this assumption may not be true. For instance, it may be that voters in certain GPs had high educational aspirations, and that those voters elected educated sarpanch in order to help them realize those aspirations; even had they not elected educated sarpanch, literacy in those GPs may

have increased more rapidly than literacy in GPs where voters did not have those aspirations. For this reason, it would be useful to have additional evidence on this effect. While data limitations prevent me from more robust methodologies in this section,¹⁶ I will use a quasi-experimental approach in the next two sections to establish the link between sarpanch education and the quality of management of government programs.

Sarpanch education and local program administration

Educated sarpanch may be more competent managers of development projects than less educated sarpanch, and may deliver public services more efficiently. Ghosh et al (2010) find that sarpanch education is positively correlated with the number of projects started in a GP in Bihar: sarpanch with high school degrees started twice as many business-promotion projects as sarpanch without high school degrees, as well as more infrastructure and development projects.¹⁷ Besley et al (2012) show that a large anti-poverty program is more effectively targeted to low-caste and landless households in GPs with educated sarpanch.¹⁸ In this section, I expand on these analyses by establishing a robust causal link between sarpanch education and public program management in the context of a large development program, the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).

MGNREGS is the largest pay-for-work program in the world: last year, it provided 2.3 billion person-days of work to 50 million Indian households.¹⁹ Under MGNREGS, any rural household that requests work is legally guaranteed a job card and 100 days per year of unskilled manual labor at a minimum wage determined by the state. MGNREGS makes up a substantial fraction of a GP's total budget: data from Bihar show that transfers for MGNREGS comprised 54% of the average GP's budget for development projects and 32% of total expenditures in 2009.²⁰ Since then, the program has grown rapidly, and last year the average GP in Bihar received ₹1.9 million for MGNREGS projects,²¹ or 70% of total GP expenditures in 2009.

¹⁶ Specifically, I lack election data from 2005, which prevents me from using a regression discontinuity approach that I will employ in the next section.

¹⁷ Ghosh et al (2010), p. 55

¹⁸ Besley et al (2012), p. 24

¹⁹ MGNREGS website, FY 2012-2013, [URL](#)

²⁰ Ghosh et al (2010), pp. 145 and 155

²¹ MGNREGS website, Fund Flow Statement for FY 2012-2013, [URL](#)

The sarpanch is responsible for overseeing local administration of MGNREGS. Since the premise of the program is demand-driven development, local leaders, especially the sarpanch, must manage most aspects of implementation, including lobbying for projects, managing beneficiary lists, overseeing project implementation, and ensuring that workers get paid and materials get procured. Having an incompetent sarpanch can make the difference between MGNREGS functioning as an effective social safety net in a GP and failing to provide sufficient work to underemployed laborers.

A sarpanch's ability to oversee effective implementation of MGNREGS depends on her education. J-PAL administered a short assessment of knowledge about MGNREGS to sarpanch in Rajasthan in 2011. The assessment tested the sarpanch's knowledge of the program's provisions that are standard across GPs. The number of questions answered correctly was strongly correlated with sarpanch educational attainment: sarpanch with a high school degree answered on average 18% more questions correctly than sarpanch without a high school degree.

Does more education translate not only into more knowledge about the program, but into better management as well? To answer this question, I use results from the 2010 local elections in Rajasthan to compare MGNREGS management in GPs that elected an educated sarpanch versus GPs that elected an uneducated sarpanch. My approach merges two datasets, collapsed to the GP-level. First, I use SEC candidate-level vote data from the 2010 local elections, which includes the educational attainment of candidates. Since 62% of the education data is missing for sarpanch candidates, I use the SEC's district-level counts of sarpanch by level of education and a robust statistical process to fill in the missing data. **Appendix 4** explains this process, called multivariate normal imputation, in more detail. Second, I download data on indicators of MGNREGS management from 2009 to 2013 from the MGNREGS website.²²

²² Data on all MGNREGS outlays at the GP-level is available on the new Public Data Portal of the MGNREGS website at <http://164.100.129.6/netnrega/dynamic2/DynamicReport_new4.aspx>.

I limit my analysis to GPs where the margin of victory between the educated candidate and the uneducated candidate was very small (less than 5% of votes cast).²³ In these cases, the election outcome was essentially random, and unrelated to other GP characteristics (like average level of educational attainment among voters).²⁴ This approach therefore enables me to measure the impact on local development outcomes specifically attributable to the sarpanch.

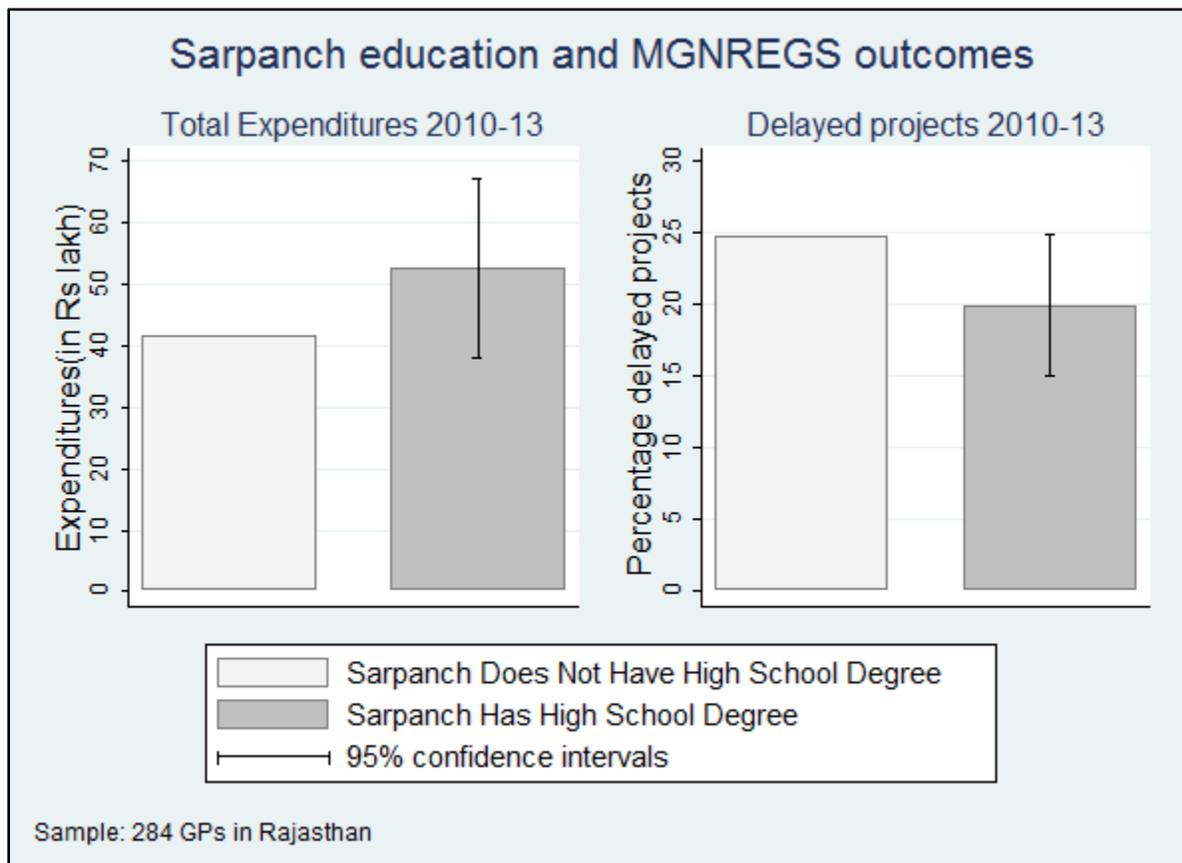
It is important to note that I am not able to measure the effect of sarpanch education *per se* on development outcomes, but rather the effect of the type of sarpanch who tends to be educated versus the type of sarpanch who tends to be uneducated. This subtle distinction can lead to poor policy prescriptions if not properly understood. For instance, it may be that educated sarpanch appear to be better managers because education is closely related to a more directly applicable characteristic, such as political experience. In this scenario, encouraging educated villagers to run for office may not be an effective policy tool if it only prompts educated villagers without political experience to run. I account for this problem to some extent by including several relevant candidate characteristics from the SEC dataset in my analysis, including caste, gender and age. My results can therefore be interpreted as the effect of the type of sarpanch who tends to be educated on development outcomes that is not attributable to the characteristics I account for in my model. However, there may be other unmeasurable sarpanch characteristics, like ambition, that are related to education and also contributing to the differential impact between GPs that elect educated candidates and GPs that elect uneducated candidates.

I analyze two types of indicators of MGNREGS management: total MGNREGS spending, which demonstrates how extensive the program is in the GP, and the percent of projects running behind schedule, which demonstrates the quality of local management of the program. **Figure 2** presents my results, with full regression tables available in **Appendix 6**:

²³ 5% of votes cast is a typical cutoff in regression discontinuity analyses on elections, e.g. Novosad and Asher (2012), Lee (2001)

²⁴ **Appendix 5** includes balance tests to show that GPs that barely elected an educated sarpanch are comparable to GPs that barely elected an uneducated sarpanch on the outcome variables prior to election and on various measures from the previous census.

Figure 2: Effect of sarpanch education on MGNREGS outcomes



GPs that elected a sarpanch with a high school degree received on average ₹1.08 million more in funds in the years after the election than GPs that elected a sarpanch without a high school degree. GPs that elected a sarpanch with a high school degree had 4.8 percentage points or 20.2% fewer projects running behind schedule in the years after the election than GPs that elected a sarpanch without a high school degree. This evidence suggests that sarpanch education matters for local program management.

Sarpanch education and the misuse of political influence for private gain

Another channel through which sarpanch education may affect local development outcomes is by influencing the likelihood of the sarpanch to abuse her power in order to benefit her supporters at the expense of the village. Besley et al (2012) offer several theories for how a sarpanch might abuse her power to influence policy. In the self-interest model, the sarpanch uses her influence to direct more public services to her own household. The authors find evidence for this in four

South Indian states: after controlling for official eligibility criteria, like wealth and caste, sarpanch are 9.5% more likely to be selected as beneficiaries of the Below Poverty Line program.²⁵ In the agenda-setting model, the sarpanch uses her influence to direct more public services to her supporters, who, due to rigid ethnic boundaries in communities in rural India, often live nearby. I test this model below.

It is not clear from theory whether educated sarpanch are more or less likely to be corrupt than uneducated sarpanch. On the one hand, an educated sarpanch may be more likely to be corrupt if her education makes it easier for her to hide illicit activity. On the other hand, an educated sarpanch is more likely to have lucrative career opportunities in the private sector; thus an educated villager who chooses to work in the public sector may be more likely to be motivated by altruism (and less likely to be corrupt) than an uneducated villager who chooses to work in the public sector because she does not have lucrative private sector options.

Another possibility is that educated and uneducated sarpanch are equally motivated by altruism but that uneducated sarpanch are more susceptible to capture by local political and landed interests. In a recent interview with *The Indian Express* about issues in decentralization, economist Pranab Bardhan related corruption to the capacity gap in GP offices:

“Capture is a big problem. It is much easier to capture a panchayat than the Lok Sabha... The money is coming from above, and that’s where the power is... Quite often, in villages, there is no expertise. A lot of corruption takes place because there simply isn’t the capability to do book-keeping or auditing.”²⁶

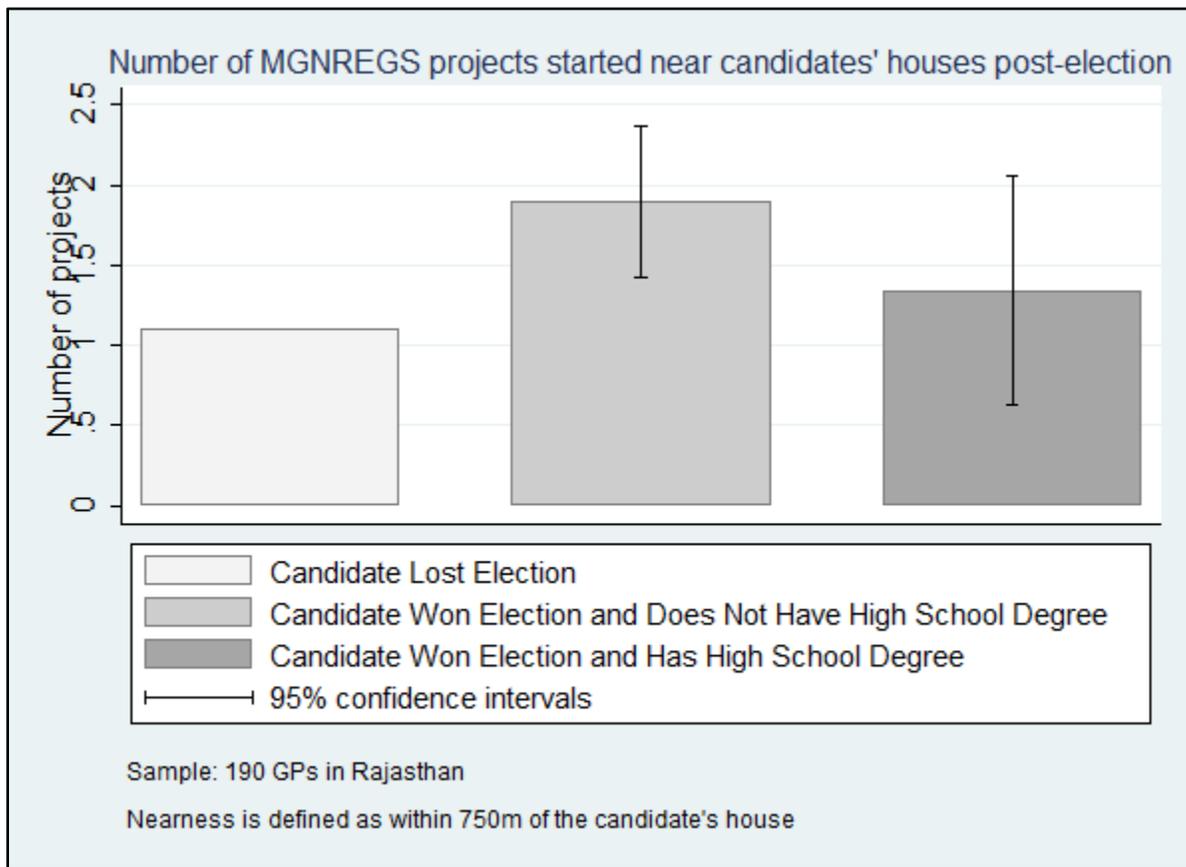
I test for sarpanch abusing their political influence with data from survey GPs, which includes geo coordinates of MGNREGS projects and the coordinates of sarpanch candidates’ households. I use ArcGIS to create buffers around each candidate’s household, then I overlay the buffers with MGNREGS project locations. Since sarpanch are more likely to come from larger villages, which also have more projects, a comparison of the number of projects near the sarpanch’s house

²⁵ Besley et al (2012), p. 22

²⁶ *The Indian Express* (2014), [URL](#)

versus losing candidates' households would likely overstate the sarpanch effect. Instead, I use a similar approach as with MGNREGS funds and delayed projects: I limit my sample to GPs where the margin of victory is less than 5% of vote share, then compare the number of projects started after the election near the winner's house versus the number of projects near the runner-up's house. The results are in **Figure 3**, with the full regression tables in **Appendix 7**:

Figure 3: Effect of sarpanch education on corruption in MGNREGS administration



These results confirm the agenda-setting model: significantly more MGNREGS projects are started near the households of candidates who barely won the election than those who barely lost the election. At the same time, more educated sarpanch are less likely to use their influence to direct MGNREGS projects to their neighborhood. In fact, statistical tests on these results show that the number of projects started near the households of educated winners is statistically indistinguishable from the number of projects started near the households of educated losers, whereas the difference in the number of projects started near the households of uneducated

winner versus uneducated loser is positive and statistically meaningful.²⁷ **Appendix 7** confirms that these results are robust to whether I only look at projects in the immediate vicinity of the sarpanch's house (500m) or further away (1,000m).

Besley et al (2012) find a similar result in South India in the context of another government program: More educated politicians are less likely to use their influence to secure Below Poverty Line cards than less educated politicians, even after accounting for eligibility criteria like income.²⁸ The sarpanch advantage entirely disappears for sarpanch with a high school degree.²⁹

This evidence suggests that when voters elect an uneducated sarpanch, they may be inadvertently increasing the probability that they are also electing a sarpanch who is more susceptible to abusing her influence or to political capture, with detrimental effects on public service delivery. Hence, efforts by the MoPR to reduce illicit behavior could simultaneously improve the quality of candidates who decide to run for office.

Distributional implications

The type of sarpanch that a GP elects depends partly on GP characteristics, like average educational attainment, and thus certain types of GPs systematically choose less educated sarpanch. This may cause certain GPs to be stuck in an “education trap”: GPs with lower average educational attainment are more likely to elect less educated sarpanch, less educated sarpanch invest less in education, and thus the GP has a lower future supply of educated candidates. Since sarpanch education matters for public service delivery, this education trap could create conditions for a poverty trap: historically less educated GPs elect less educated sarpanch, who are inferior managers of public service delivery, leading to declining public goods and worsening poverty with successive uneducated sarpanch.

Using evidence from J-PAL's household survey in Rajasthan, I find that GPs with historically worse infrastructure are more likely to elect uneducated sarpanch. The full regression results can

²⁷ Specifically, an F-test for whether the sum of the first and third coefficients in the regression results in **Appendix 7** is significantly different from zero.

²⁸ Besley et al (2012), Table 6 Column 4

²⁹ *ibid.*

be found in **Appendix 8**. When combined with **Figure 3**, this completes the vicious cycle of infrastructure-poor GPs receiving worse public services and becoming still poorer. Hence, while the problem of uneducated sarpanch is pervasive, it may have particularly detrimental and long-lasting implications for the poorest GPs. If the MoPR has limited funds or capacity to roll out new programs across North India, then it should focus its efforts on these GPs. I explore this option in the “targeted” scale-up scenario described in the implementation guidelines below.

Box 2 describes some of the main findings from this section:

Box 2: Sarpanch education and development outcomes: A summary of findings

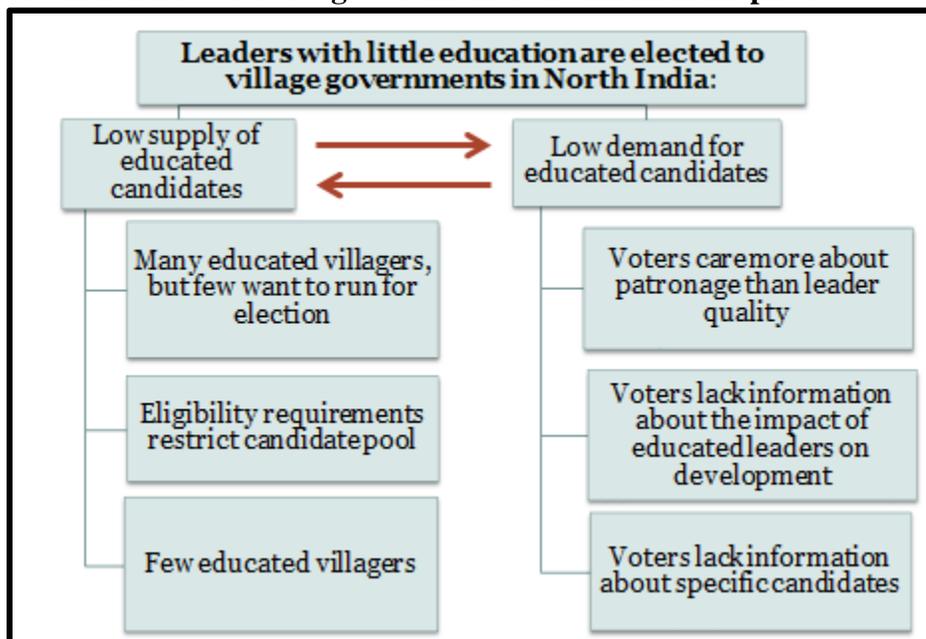
- Sarpanch education may affect GP-level educational outcomes. In particular, educated female sarpanch appear to have a large positive impact on female literacy.
- GPs that elected educated sarpanch received more funds and experienced fewer project delays in MGNREGS.
- Less educated sarpanch were more likely to use their policy influence to direct MGNREGS projects to their neighborhood, at the expense of the GP.
- GPs with worse public infrastructure are more likely to elect uneducated sarpanch, creating conditions for a viscous cycle of bad public service delivery and slow development in the poorest GPs.

In the next section, I examine the reasons why so many uneducated sarpanch are elected to village governments, in spite of the negative impact they have on public service delivery.

III. Diagnosing the problem: Factors driving the incidence of uneducated sarpanch

The factors driving the high incidence of uneducated sarpanch in North India can be broadly categorized as supply-side (focused on candidate-type) and demand-side (focused on voter preferences and behavior), as below:

Figure 4: Factors behind the high incidence of uneducated sarpanch



The red arrows between supply and demand factors denote a feedback loop that plays a critical role in determining election outcomes. On the one hand, the supply of certain types of candidates affects the demand for those types or other types of candidates. This can occur when, for instance, voters vote strategically: voting decisions can differ depending on who else is running, even if the voter's preferred candidate runs in all possible scenarios.³⁰ Supply of candidates can also affect demand in a dynamic sense, where exposure to certain types of candidates and leaders shifts voter preferences over time. Beaman et al (2009), for instance, find that temporary gender quotas in GPs improve voter perceptions about the effectiveness of women leaders, and ultimately increase votes for women candidates in future elections.

At the same time, demand for certain types of candidates can affect supply. It is costly for candidates to run for election; they are more likely to run if they believe that they are likely to win.³¹ Factors that affect voter demand can simultaneously affect the supply of candidates. In Rajasthan, for example, Banerjee et al (2013) find effects on candidate entry from a voter awareness campaign that emphasized the importance of electing sarpanch candidates on the basis of performance: incumbents were half as likely to run again in GPs that received the campaign

³⁰ Farquharson (1969)

³¹ Besley and Coate (1997) model the determinants of a candidate's decision to run for election, among them the anticipated actions of voters.

versus GPs that did not receive the campaign, and the effect was strongest for the worst performing incumbents (based on an index of local MGNREGS management).³² In this context, low-performing incumbents anticipated that the voter awareness campaign would shift voter preferences for better quality candidates, thereby reducing the likelihood that they would win and the incentive for them to re-contest.

These feedback effects have important implications for policy: interventions that target one factor will likely affect outcomes indirectly through other factors. This policy exercise will attempt to identify the factors that primary and secondary evidence indicate are the most constraining to the election of educated sarpanch, while taking into account the direct and indirect effects that targeting those factors would have on electoral outcomes.

A. Supply-side factors

Myerson (2011) writes that, “the essential problem in building a democratic state is to develop the nation’s supply of democratic leaders.”³³ In this section, we consider whether the high incidence of uneducated sarpanch in North India can be partly attributed to an underdeveloped supply of high-quality prospective leaders. If this is the case, then at least one of three conditions are likely to hold: there is a small or nonexistent pool of educated villagers, there are educated villagers who would like to run but are restricted from doing so, or there are educated villagers who are not restricted but choose not to run.

1. Supply-side factors: Availability of prospective educated candidates

There is little that the MoPR can do about the high incidence of uneducated sarpanch if some GPs have no educated villagers, except to provide training and administrative support after elections. Fortunately, this is not the case. In the J-PAL household survey, a minimum of 10.4% of respondents in each GP were able to read a 2nd grade level text, though in most GPs the rate was 44% or more. Projecting the survey data to the whole GP population, I calculate that every GP (in the sample) has at least 337 adults who can read a 2nd grade text, and most GPs have 2,000 adults or more who can read at this level.

³² Banerjee et al (2013), p. 17

³³ Myerson (2011), [URL](#)

There are substantially fewer villagers with high school or college degrees. However, for the most part, every GP has some high school and college graduates. Distributions in survey districts of literate villagers, high school graduates and college graduates are calculated using sampling weights and shown in **Appendix 9**.³⁴ While most GPs have fewer than 1,000 high school graduates and fewer than 500 college graduates, even the least educated GPs have some educated villagers who could run for election. Next I will explore whether these villagers are prevented from running or they choose not to run.

2. Supply-side factors: Restrictions preventing educated candidates from running

In India, one of the core motivations for decentralization under the 73rd amendment was “insufficient representation of Scheduled Caste, Scheduled Tribes and women.”³⁵ The amendment mandates that states reserve at least 1/3 of GP seats for women and a fraction of seats for low castes proportional to their population in the state; some states have reserved more seats than required. While caste and female reservation rotate between GPs every five years, in certain states up to ¾ of GPs can have restrictions on who is eligible to contest the sarpanch seat in any given election. In the three survey districts in 2010, 47% of GPs had restrictions on the caste of eligible candidates and 48% of GPs were reserved for women candidates. In total, 74% of sarpanch seats were reserved either for a particular gender or caste, or both.

Gender and caste quotas have played an important role in increasing representation of minority groups in local governments in India. Strong causal evidence has shown that quotas reduce voter bias toward female candidates after they have been removed and increase the political participation of women.³⁶ Greater representation translates into policy gains for minority groups: female sarpanch invest more than male sarpanch in public goods that matter for women, such as drinking water and roads, and low caste politicians increase spending on welfare programs for low caste groups.³⁷ By increasing the political participation of minority groups, and hence by increasing the pool of qualified candidates, gender and caste quotas are also important instruments for improving sarpanch quality and public service delivery in the long run.

³⁴ The value in the histogram for each GP is the expected value using sample weights; the actual value may differ from this due to statistical noise, which is greater for larger GPs.

³⁵ 73rd Amendment to the Constitution of India (1992), [URL](#)

³⁶ Beaman et al (2009); Bhavnani (2009); Beaman et al (2011)

³⁷ Chattopadhyay and Duflo (2004); Pande (2003)

Quotas also play an important role in reducing economic and social inequalities between minority and majority groups in rigidly stratified communities. For instance, GPs that were reserved for women and that elected an educated sarpanch had 4.8 percentage points greater gains in female literacy from 2001-11 than GPs that were unreserved and elected an educated (usually male) sarpanch (Section II.C). Chattopadyay and Duflo (2004) and Pande (2003) give further evidence that minority leaders prioritize the policy preferences of minority groups.

In the short run, however, debates over gender and caste quotas have centered on the deleterious effects of preventing groups with historically higher educational attainment (i.e. upper caste men) from contesting nearly $\frac{3}{4}$ of village elections in many states. In the three survey districts, sarpanch in reserved seats are indeed more likely to be uneducated. Whereas 85% of sarpanch in unreserved GPs were able to read a 2nd grade text, only 2% of sarpanch in GPs reserved for low caste women were able to read the same text.

Although gender and caste quotas may reduce the number of educated candidates who can contest for seats in certain GPs in the short run, they are not the root cause for the high incidence of uneducated sarpanch. First, even in reserved GPs, there are many educated women and minorities who could run but choose not to. In sample GPs, there are on average 248 low caste high school graduates, 113 female high school graduates, and 22 female low caste high school graduates. Second, even in unreserved GPs, there are many sarpanch who are uneducated: only 38.2% of sarpanch in unreserved GPs have high school degrees and 14.7% cannot read.

However, it is important to address the fact that, in the short run, sarpanch in reserved constituencies have on average fewer educational qualifications. Additional policy instruments, such as special trainings for minority candidates, may be critical to ensuring that the MoPR meets its dual objectives of bolstering the capacity of local governments to deliver public services and encouraging minority political participation.

3. Supply-side factors: Incentives to educated villagers to contest in elections

In the previous section, I showed that there are many educated villagers, from all ethnic groups and both genders, who are living under uneducated sarpanch. Most of these villagers do not run for office. In the typical GP in the three survey districts in 2010, 8 candidates contested the

sarpanch's seat. Only 3 of these candidates could read a 2nd grade text and only 2 had high school degrees. In 72% of GPs, no candidate had a college degree.

a. Incentives to run: Sarpanch salary

The pay scale for sarpanch is likely one reason why more educated villagers do not run for the position. Although pay varies by state, it is generally extremely low:

Table 3: Sarpanch pay in select states

State	Pay per month: INR (USD)	Source
Andhra Pradesh	₹1,500 (\$24)	The Hindu
Bihar	₹1,200 (\$19)	Bihar Times
Goa	₹4,000 (\$64)	Times of India
Orissa	₹1,000 (\$16)	The Telegraph
Punjab	₹1,200 (\$19)	Day and Night News
Rajasthan	₹3,000 (\$48)	Pagalguy.com
Tripura	₹1,000 (\$16)	Tripura Government
Uttar Pradesh	₹3,000 (\$48)	Indiakanon.org

To put these salaries into perspective, the Planning Commission of India sets the poverty line for rural areas at ₹816 per capita per month.³⁸ A family of four that relies on a sarpanch salary is living in poverty in every state but Goa. The government does not expect sarpanch to supplement their salary with additional income: sarpanch are prohibited from holding any other job at risk of forfeiting their office.³⁹

Educated villagers have far more lucrative options, even within the public sector, than being sarpanch (assuming that the official salary is their only remuneration). Panchayat teachers in Rajasthan start at ₹9,300 per month, and senior teachers earn up to ₹34,800 per month.⁴⁰ Junior civil servants based in panchayat offices earn similar salaries. Educated villagers who move to urban centers can make far more. When a woman gave up a corporate job in Delhi to become a low-paying sarpanch of her family's village, it made newspaper headlines. The woman

³⁸ Press Note on Poverty Estimates, Planning Commission (2013), [URL](#)

³⁹ Rajasthan Panchayati Raj Act (1994), Part 4.1, [URL](#)

⁴⁰ Rajasthan Finance Department, Revision of Pay Scales (2006), [URL](#)

commented on the sarpanch salary, "I get ₹3,000 as salary as a sarpanch which covers nothing. I am blessed that my family can look after me. I wonder what other sarpanch do."⁴¹

b. Incentives to run: Altruism

So if it's not the salary, what motivates so many candidates – as high as 24 in some GPs – to run for office? One reason may be altruism. In the J-PAL survey of sarpanch candidates, 83.9% stated that they ran to develop the village, and 79.1% stated that they ran to improve village infrastructure. However, it is likely that candidates exaggerate their sense of selflessness while on the campaign trail. Hanna and Wang (2013) find that the public sector may actually attract less altruistic people: university students in Karnataka who cheat and exhibit anti-social behavior in laboratory games are more likely to express a preference for entering public service.⁴²

c. Incentives to run: Illicit returns to office

Another reason that candidates may run for office is non-salary remuneration. Although sarpanch pay is not enough to keep a family out of poverty, only 25.7% of incumbents in survey GPs feel that they receive insufficient compensation. Some sarpanch may be making up the difference by stealing from public coffers. Police in Bihar are tracking more than 100 sarpanch who have become millionaires in the last five years, and 500 other sarpanch who have assets over ₹10 million.⁴³ According to the newspaper article, these sarpanch amass wealth by siphoning off funds from MGNREGS and other development programs, and spend much of their ill-gotten gains to arm militias that they use to cement their power. Other sarpanch may be growing wealthy by demanding bribes from villagers to access public service. In West Bengal, 10.2% of households admit to paying a bribe for GP services;⁴⁴ there are likely more households that are paying bribes but do not admit this to surveyors.

Sarpanch may also profit from their position by influencing policy in ways that favor their family and supporters, without directly stealing public funds. As demonstrated in **Figure 3**, sarpanch give priority to their neighborhood when deciding where to start new MGNREGS projects.

⁴¹ Pagalguy.com (2012), [URL](#)

⁴² Hanna and Wang (2013), p. 19.

⁴³ DowntoEarth.org (2013), [URL](#)

⁴⁴ Beaman et al (2011), Table 5

d. Incentives to run: Career opportunities

For some candidates, the decision to run may have less to do with short-term returns from their tenure as sarpanch, and more to do with the long-term payoff from starting a career in politics. In survey districts, 2/3 of sarpanch state that they would like to run for political office in the future, and 58% of those sarpanch state that they would like to run for a higher office, such as district leader, state legislator, or even member of the national parliament.

However, most of these sarpanch will not be able to attain higher office, as there are few openings and many candidates for these positions. In the J-PAL survey of 156 outgoing sarpanch, none were successful in a bid for higher office. In fact, only 6 of the 45 sarpanch who chose to run again for the same position were re-elected. The majority of previous sarpanch either went back to working on their farms (56.3%) or became unemployed (27.1%). Educated villagers can likely find better long-term options in other careers.

e. Incentives to run: Family pressures

Many candidates may run due to family pressures. In survey GPs, 69.3% of candidates said that their decision to run was influenced by their family members. Family pressures may reflect norms about certain families or castes participating in local politics; if this is the case, then many villagers from other families or castes may face social obstacles to contesting in local elections. This could lead to concentration of power in the hands of the few, or “captured democracy”, with detrimental effects on long-term economic outcomes.⁴⁵

In Rajasthan, local politics are dominated by a small number of political families. A back-of-the-envelope calculation suggests that there are a maximum of 1 million elected leaders, past and present, living in Rajasthan at any one time.⁴⁶ According to the 2011 Census, there are 12.7 million households in the state.⁴⁷ If I assume that each leader comes from a different household, then the expected probability that someone in a random household has a relative who has held elected office is about $(1 \text{ million} / 12.7 \text{ million}) = 7.9\%$. Yet in survey GPs, 46.8% of sarpanch

⁴⁵ Acemoglu and Robinson (2008)

⁴⁶ Calculation: $\sim 105,000$ panch + 9,166 sarpanch + 5,280 sub-district leaders + 1,254 district leaders + 3,366 ward councilors + 195 state representatives + 25 MP = $\sim 125,000$ elected leaders * 8 five-year terms = ~ 1 million. Assumes no leader is re-elected. Counts are from the Rajasthan SEC website, Panchayat Statistics, [URL](#).

⁴⁷ 2011 Census data

candidates have someone from their household who has held an elected position. In other words, sarpanch candidates are at least 6 times more likely than the average villager to come from a political household. These calculations imply that there may be a large untapped pool of potential candidates from non-political households.

Box 3: Supply-side factors: Implications for policy

This section has highlighted the following insights that are relevant for policy:

- Census and survey data show that every GP has some educated villagers from every ethnic group. Hence, policy may be able to reduce the incidence of uneducated sarpanch in all types of GPs, if educated villagers can be encouraged to run.
- In all GPs, incentives for educated villagers, especially from historically non-political households, appear to be a key constraint in their decision to not stand for election. Improving the incentives for these villagers to stand for election by increasing the appeal of the sarpanch position (though not necessarily through higher wages) may be an effective way to reduce the incidence of uneducated sarpanch.
- Sarpanch in reserved GPs have on average lower education. However, gender and caste quotas are not the root cause of the high incidence of uneducated sarpanch, and quotas may actually increase sarpanch quality over time, in addition to helping to achieve other policy goals. Providing sarpanch in reserved GPs with additional support would be a more effective long-term strategy than removing quotas.

B. Demand-side factors

In this section I explore the reasons why voters may not prioritize a candidate's education in their voting decision. If the high incidence of uneducated sarpanch in North India can be partly attributed to low demand for educated candidates, then either voters genuinely prefer less educated sarpanch or they lack information that would otherwise change their voting decision. The demand for educated candidates, in turn, may affect the supply: if demand is low, then educated villagers may be discouraged from running.

As seen in the previous section, one factor contributing to the high incidence of uneducated sarpanch is that many educated villagers choose to not run for election. However, some educated candidates do run in most elections: 66.8% of GPs in the three survey districts had at least one candidate with a high school education in the most recent elections. Most of these candidates were not selected by voters: only 16.8% of current sarpanch in these districts have a high school

education. Using SEC data on candidate characteristics, I show that educated villagers in Rajasthan who choose to run may face a disadvantage: each additional level of educational attainment is associated with a 3% decrease in the probability of being elected sarpanch.⁴⁸

Table 4: Electoral disadvantage of educated candidates

	Probability of winning election	
Candidate's educational attainment	-0.030***	[0.008]
Candidate is incumbent	0.017	[0.042]
Candidate is female	0.010	[0.025]
Candidate is low caste	-0.059***	[0.021]
Candidate age	0.000	[0.000]
Average probability of winning	0.130	
GP Fixed Effects	Yes	
Observations	5,711	

1. *** p<0.01, ** p<0.05, * p<0.1

2. Educational attainment is a categorical variable, where 0 = No School, 1 = Primary School,..., 6 = PhD

3. Robust standard errors are in brackets.

1. Demand-side factors: Voter preferences for educated sarpanch

One reason why voters may not select educated candidates is because they prefer uneducated sarpanch. If voters have strong preferences for uneducated sarpanch, then the MoPR may be able to do little to reduce the incidence of uneducated sarpanch in North India. Fortunately, this does not appear to be the case. In J-PAL's household survey in Rajasthan, respondents were asked to name the two most important qualities in a sarpanch. 65.0% of respondents said "Educated", and it was the second-most common response, after "Honest". In another J-PAL survey of 5,522 households in Uttar Pradesh, respondents were asked to rank a list of 12 leader qualities from most important to least important in helping them make their voting decision. "Leader's education" came in second, after "Leader's record in spending development funds".

2. Demand-side factors: Voter perceived returns to having educated sarpanch

While voters may prefer having an educated sarpanch to an uneducated sarpanch when all other attributes are equal, they still might choose an uneducated sarpanch when those other attributes are not equal. This behavior is desirable if those other attributes have a greater impact on the

⁴⁸ Besley et al (2012) find the opposite effect in South India, where one additional year of education is correlated with a 0.6% increased likelihood of being elected sarpanch (p. 17).

sarpanch's ability to govern than her education, or if the uneducated candidate better represents voters' policy preferences than the educated candidate. However, this behavior could lead to sub-optimal electoral outcomes if it is due to voters under-valuing the returns to having an educated sarpanch relative to other attributes, and if it results in voters systematically choosing uneducated sarpanch over educated sarpanch.

For example, voters may undervalue a candidate's education relative to her caste. Caste-based voting is one of the most ubiquitous political phenomena in India, playing a prominent role in national elections, state elections, and local elections.⁴⁹ Banerjee and Pande (2009) develop a model that shows how this kind of voting can lead to lower quality leaders being elected. Although voters care about candidate quality, they also care whether the candidate belongs to their ethnic group; thus, candidates from the majority ethnic group do not need to be as competitive along quality dimensions as candidates from the minority ethnic group. The numerical dominance of one caste and the strength of voter preference for same-caste leaders lead to lower quality leaders being elected.⁵⁰ It may be that caste-based voting helps less educated candidates from the numerically-dominant caste group defeat more educated candidates from minority groups.

Although there is limited evidence on voters' perceived returns to having an educated sarpanch, there is strong evidence that voters mis-value the returns to other candidate attributes. For instance, Beaman et al (2009) show that male voters overvalue the impact that sarpanch gender has on public service delivery: when asked to evaluate the hypothetical effectiveness of sarpanch who were equivalent on all dimensions except for gender, male voters systematically judged male sarpanch as more effective than female sarpanch.⁵¹ There is also evidence from other contexts that households undervalue the returns from their own education to lifetime earnings.⁵² It is therefore reasonable to assume that voters, who mis-value the returns to other candidate attributes and mis-value the returns to their own educational attainment, would also mis-value

⁴⁹ Chandra (2004)

⁵⁰ Banerjee and Pande (2009), p. 11

⁵¹ Beaman et al (2009), p. 4

⁵² Jensen 2010

the returns to a candidate's education. Given the important policy implications such behavior would have, additional evidence on this topic would be useful.

3. Demand-side factors: Voter knowledge about candidates

Voters may prefer educated candidates and correctly value the returns to having an educated sarpanch, yet still fail to vote for educated candidates if they lack knowledge about specific candidates' attributes. This effect could be compounded by prospective candidates choosing not to run: Caselli and Morelli (2004) show that even when voters care about candidate quality, if they cannot accurately assess it, then higher-quality candidates do not enjoy an electoral advantage and therefore may choose not to run.

This model may help to explain voter behavior in contexts where voters are less familiar with candidates, such as in state-level races or national-level races. Empirical studies in several countries have shown that voters respond to information given to them about their candidates, shifting their vote from lower-quality to higher-quality candidates.⁵³ For instance, Banerjee et al (2011) printed report cards of candidates for the Delhi state legislature in 2008 in newspapers and distributed them to a random selection of slums. The authors show that voters in treatment slums had significantly more knowledge about their candidates, and that this translated into more votes for better quality candidates.⁵⁴

However, lack of information about candidates is unlikely to be a constraint in local elections, at least to the extent that it is in state or national elections. Whereas state legislators in Delhi have on average 240,000 constituents, the typical sarpanch in Rajasthan has only 5,600 constituents.⁵⁵ In survey GPs in Rajasthan, 89.1% of respondents were able to correctly identify their sarpanch, whereas only 68.2% of respondents in a survey in Uttar Pradesh were able to correctly identify their state legislator. Moreover, sarpanch live and work in the GP that they represent, unlike state legislators who live in the state capital and visit their constituency occasionally. 82.7% of survey respondents in Uttar Pradesh stated that their sarpanch visits their village at least occasionally,

⁵³ For example, see Ferraz and Finan (2008) for a natural experiment Brazil and Humphreys and Weinstein (2013) for a randomized experiment in Uganda.

⁵⁴ Banerjee et al (2011), Table 3

⁵⁵ Population counts are from the 2011 Census and constituency counts are from each state's Election Commission website.

and 35.7% stated that their sarpanch visits their village daily. In contrast, 23.6% of respondents stated that their state legislator visits their village occasionally, and only 0.3% stated that their state legislator visits their village daily.

Box 4: Demand-side factors: Implications for policy

This section has yielded the following insights that are relevant for policy:

- Educated candidates may face an electoral disadvantage, though this does not appear to be driven by strong voter preferences for uneducated sarpanch. According to stated preferences, voters prefer educated sarpanch to uneducated sarpanch, when other attributes are the same.
- At the same time, voters may undervalue a candidate’s education relative to other attributes, like caste and gender, that are not predictive of the candidate’s performance. Information campaigns about the importance of having an educated leader may “nudge” voters to make different voting decisions.
- In the context of local village elections, it is unlikely that information about specific candidates prevents voters from selecting their most-preferred candidates.

The next section will explore policy tools that the MoPR can use to address these factors and the supply-side factors discussed in the previous section.

IV. Assessing policy options

The previous sections narrowed down the factors that are most likely to be contributing to the high incidence of uneducated sarpanch to the following:

1. Educated villagers have few incentives to run, due to low pay, lack of career options, and social norms that discourage most villagers from contesting. Educated villagers are also less likely than uneducated villagers to be attracted by illicit gains.
2. Voters mis-value the returns to having an educated sarpanch.
3. The incidence of uneducated sarpanch is especially high in reserved GPs.

This diagnosis suggests that the MoPR should implement policies that focus on incentives for educated candidates to run, voters’ perceived returns to having an educated sarpanch, and additional administrative support for sarpanch in reserved GPs. Since the supply of educated

candidates and the demand for educated sarpanch are dynamically linked, these policies may not be as effective if they are implemented separately. For instance, incentivizing more educated villagers to stand for election through higher pay may not immediately shift voter behavior, which could undermine the impact of the intervention if the lack of voter response in the current election discourages educated villagers from running in future elections. Or informing voters about the importance of having educated leaders may not immediately affect the decisions of educated villagers to contest, and by the time the next election comes, even if more educated candidates are running, voters may have forgotten the awareness campaign. For these reasons, I recommend that the MoPR pursue a multi-pronged strategy that addresses these dynamic linkages and takes full advantage of the feedback loop between supply and demand.

In the following section, I discuss the policy tools that I believe should be a part of this strategy, followed by a description of alternative policies that I considered but discarded for various technical, political or administrative reasons. I conclude with guidelines for a coordinated approach to implementing the recommended elements of this strategy.

A. Recommended policy options for a multi-pronged strategy

My recommendations for policy tools that should be a part of the multi-pronged strategy are listed in **Table 5** with technical, political and administrative justifications:

Table 5: Recommended policy tools with justifications

Policy options	Technically correct	Politically supportable	Administratively feasible
Incentives for candidates			
Improve long-term career options for sarpanch	Improving career options would make the sarpanch position more competitive compared to the private sector, and attract more educated villagers to run.	Given the current movement against corruption, long-term career options of sarpanch is less likely to generate backlash than increasing sarpanch pay.	The program could be folded into existing MoPR initiatives like RGSY.
Increase monitoring of GP finances to reduce illicit gains	Increasing the risk of getting caught will discourage corrupt candidates (who also tend to be less educated) from standing for election.	Public lotteries to randomly select GPs to be audited would nullify complaints about unfair targeting.	The program could be folded into existing MoPR initiatives like PEAIS.
Voter awareness campaigns			
Street theater	Information on the returns to having an educated sarpanch would increase vote shares of educated candidates. Street theater is an effective medium for these campaigns	Historically there is little evidence of backlash against voter awareness campaigns that do not target specific candidates.	The MoPR can build on its experiences with street theater in certain states to design and implement an effective nationwide awareness campaign.

Policy options	Technically correct	Politically supportable	Administratively feasible
Administrative support for sarpanch in reserved GPs			
Training programs	Training programs may be able to increase sarpanch capacity, but more evidence is necessary.	There are no reports of sarpanch or voters opposing existing training programs.	The MoPR can use its existing infrastructure (e.g. RGPISA) to add special trainings for reserved GPs.

1. Recommended policy option: Improve long-term career options for sarpanch

Incentivizing educated villagers to run for local office would increase the supply of educated candidates and potentially reduce the incidence of uneducated sarpanch. Currently, the dearth of long-term career opportunities for sarpanch likely discourages many educated villagers from standing for election: most sarpanch are unsuccessful in their bid for re-election or are prevented from running again due to rotating quotas, even fewer are able to win a more senior position, and most return to their farms or to unemployment. Improving the long-term career options of sarpanch could increase the appeal of the position relative to private-sector options, and attract better candidates to stand for election.

There are several ways that the MoPR could achieve this goal. The MoPR could assist ex-sarpanch in finding jobs. Or the MoPR could create more elected positions at higher administrative levels, such as the block and district, so that sarpanch have a greater likelihood of advancing their political careers. However, it is not clear that there is additional need for elected officials at those levels.

Instead, I recommend that the MoPR create special administrative positions for ex-sarpanch in GP offices. GPs have clear need for additional administrative support: a recent World Bank appraisal of GP functioning concluded that GPs “have very limited human resources at their disposal to navigate and manage a complex set of government schemes.”⁵⁶ Talented ex-sarpanch are ideal candidates to fill this capacity gap. Over the course of their five-year tenure, sarpanch gain specialized knowledge on how to manage MGNREGS, BPL and other government programs. This knowledge could be leveraged by placing the most talented sarpanch into local government offices to assist with administration after their tenure. In addition to improving GP

⁵⁶ World Bank (2011), p. 2

functioning, such a program would expand the opportunities available to the most talented sarpanch, and potentially attract more educated villagers to run for local office.

2. Recommended policy option: Increased monitoring of GP finances

Monitoring may be an effective way for the MoPR to simultaneously reduce leakages in public service delivery and improve the quality of elected leaders. Monitoring increases the risk of getting caught siphoning off program benefits, like MGNREGS jobs or BPL cards, and therefore increases the cost of corruption. Since Besley et al (2012) and **Figure 3** suggest that uneducated sarpanch are more likely than educated sarpanch to abuse their power in this way (or are more susceptible to political capture), monitoring would discourage uneducated sarpanch from contesting without affecting the decisions of educated sarpanch to run. Hence, the quality of the candidate pool would increase, leading to better electoral outcomes.

In practice, the effectiveness of monitoring depends on several conditions. First, corrupt behavior must be detectable. Second, corrupt behavior, once detected, must be punishable. Punishment might include imprisonment or fines, though this will require legal precedents and an efficient judiciary at the local level. A cheaper alternative may be to simply publicize the results of monitoring and allow social sanctions or voters to punish corrupt behavior. Ferraz and Finan (2008) show that voters in Brazil respond to revelations of corrupt behavior: corrupt mayors who were randomly selected to be audited before municipal elections were 17% less likely to be re-elected than corrupt mayors who were audited after elections.⁵⁷ However, the effectiveness of this channel depends on the incumbent's prospects for re-election: Ferraz and Finan (2011b) find that mayors serving in their first term (and thus eligible for re-election) steal 27% fewer resources than mayors serving their second term (and thus ineligible to stand again) when threatened with audits.⁵⁸ Since many sarpanch are ineligible for re-election due to rotating reservation, and those that are eligible face strong anti-incumbency bias, voter censure may be an insufficient motivator to reduce corruption.

The effectiveness of monitoring also depends on the monitoring system being incorruptible. Public monitoring systems in India have been undermined by failing to take into account the

⁵⁷ Ferraz and Finan (2008), p. 705

⁵⁸ Ferraz and Finan (2011b), p. 1274

incentives of the monitors, as with pollution audits in Gujarat, or by the monitored finding ways around the system, as with nurse attendance in Rajasthan.⁵⁹ It may be difficult for the MoPR to guarantee the integrity of a monitoring system that spans all GPs. It may be more feasible for the MoPR to only audit a subset of GPs, selected based on red flags in administrative records. Or the MoPR could randomly select GPs to receive audits; if every GP has an equal likelihood of selection, and if that likelihood is not insignificant, then random audits may be almost as effective as comprehensive monitoring and far less costly to implement.

3. Recommended policy option: Voter awareness campaigns via street theater

Increasing voters' perceived returns to having an educated sarpanch would increase the demand for educated candidates and encourage more educated villagers to run for the position. The challenge is for the MoPR to determine the appropriate media for awareness campaigns. Fortunately, there is a large body of evidence on the impact of different types of awareness campaigns in India.

Street theater is often used by government departments and NGOs to raise awareness about important issues in India, such as early marriage, voter turnout, and violence against women.⁶⁰ As one advertising executive says, “[Street theater] is cheap and effective, and nothing hits like a visual medium.”⁶¹ It may be the most effective medium for the MoPR to raise awareness about the importance of having an educated sarpanch.

Recent studies have shown that information conveyed through live street entertainment can shift the behavior of rural Indian voters. Banerjee et al (2012) evaluate the impact of an awareness campaign in Uttar Pradesh involving public meetings and puppet shows that discussed the importance of voting based on development issues rather than caste. Voters in GPs that received the awareness campaign were 6.5% less likely to vote for their caste-preferred party, and low-caste voters were 12.0% less likely to vote for their caste-preferred party.⁶² Banerjee et al (2013) evaluate the impact of an awareness campaign in Rajasthan involving street plays that discussed

⁵⁹ Duflo et al (2013), Banerjee et al (2008)

⁶⁰ The Guardian (2009), [URL](#); Dawn News (2012), [URL](#); Kickstarter.com (2013), [URL](#)

⁶¹ Chicago Tribune (2012), [URL](#)

⁶² Banerjee et al (2012), Table 7a

the sarpanch's responsibilities in delivering public services. In GPs that received the awareness campaign, worse-performing incumbents were less likely to stand for re-election.⁶³

Crucially, this awareness campaign also encouraged more educated villagers to stand for election and win: treatment GPs had on average one more literate candidate than control GPs,⁶⁴ and literate candidates in treatment GPs received on average 11.5% more share of the votes and were 14.1% more likely to win than literate candidates in control GPs.⁶⁵ This evidence suggests that giving voters information about the importance of selecting capable leaders can be an effective way to reduce the incidence of uneducated sarpanch, and that street theater is one effective medium for delivering that information. There is also clear political will for this kind of intervention, since the MoPR recently stated that, "Special focus will be given to organize puppet shows and street plays" to spread awareness.⁶⁶

4. Recommended policy option: Training programs for sarpanch in reserved GPs

The policy options already discussed can be effective ways to reduce the incidence of uneducated sarpanch in all GPs. However, given the lower rates of educational attainment among minority groups, additional policy instruments may be critical to ensuring that the MoPR also increases the capacity of sarpanch in reserved GPs.

Special training programs for newly-elected sarpanch may be one way to achieve this goal. Most GP leaders already attend training sessions: in Bihar, for instance, sarpanch currently attend on average 3 training programs for a total of 5 days.⁶⁷ However, the groups that could potentially benefit the most from training are the least likely to take it up: upper caste sarpanch get on average 6.0 days of training versus 2.2 days for the lowest castes, and men get on average 6.8 days of training versus 3.8 days for women.⁶⁸ This suggests that there is an important gap that the MoPR could fill in training sarpanch in reserved GPs. There is clear political will for such an initiative: the recently-released Fifteenth Anniversary Charter on Panchayati Raj states that

⁶³ Banerjee et al (2013), p. 1

⁶⁴ *ibid*, p. 17

⁶⁵ *ibid*, p. 30

⁶⁶ Media and Publicity Scheme Guidelines, MoPR, [URL](#)

⁶⁷ Ghosh et al (2010), Table 4.16

⁶⁸ *ibid*.

“There must be specialized training programs for different groups, such as women, SC/ST (low castes) and young representatives.”⁶⁹

B. Alternative policy options not recommended at this time

In the previous section I recommended four policy tools that the MoPR could incorporate into a multi-pronged strategy. In this section, I discuss alternative tools that policymakers sometimes use to achieve similar goals in other contexts that I do not recommend at this time for various technical, political and administrative reasons.

1. Alternative policy option: Increase sarpanch pay

One policy option that could incentivize more educated villagers to run for election is to increase sarpanch pay, which is extremely low (**Table 4**). Evidence on the impact of increasing sarpanch pay in India is limited,⁷⁰ though evidence from other contexts shows that increasing politician pay is only marginally effective in attracting better candidates. Ferraz and Finan (2011a) find that a 20% increase in wages for councilors in Brazil leads to an increase of 0.2 years of schooling for the average candidate.⁷¹ Kotakorpi and Poutvaara (2011) find that a 35% increase in wages for members of parliament in Finland has no effect on the average education level of male MPs, and only a small positive effect on the average education level of female MPs.⁷²

Moreover, it may be difficult for the MoPR to justify pay raises for politicians in the current political climate. Anna Hazare and others have led massive protests in recent years against corruption. The impressive performance of the Aam Aadmi Party, an offshoot of Hazare’s movement, in last year’s elections in Delhi demonstrates the popular appeal of the movement. Given this political climate, the MoPR might face substantial resistance to politician pay raises.

2. Alternative policy option: Minimum qualifications for candidate eligibility

Minimum educational qualifications for prospective candidates would ensure that every GP has an educated sarpanch. Eligibility restrictions have a long precedent in the panchayat system, and

⁶⁹ Fifteenth Anniversary Charter on Panchayati Raj (2013), part 5.3.4

⁷⁰ Since state governments change sarpanch pay for all GPs in their states at the same time, there is a lack of within-state heterogeneity that would enable researchers to identify the causal impact of pay raises. Since very few states publish sarpanch education data, it is also not possible to do a differences-in-differences analysis of the change in sarpanch quality when one state changes pay and another does not.

⁷¹ Ferraz and Finan (2011a), p. 2

⁷² Kotakorpi and Poutvaara (2011), p. 883

rotating gender and caste quotas cover up to ¾ of GPs in some places. Some states have imposed additional eligibility criteria. In Bihar, as of last year, candidates must have a toilet in order to contest in sarpanch elections.⁷³

However, minimum educational qualifications are not politically saleable. This is evident in that several states, including Andhra Pradesh and Uttar Pradesh,⁷⁴ have wanted to implement them but could not get legislative approval. The primary concern is that minimum qualifications would systematically exclude certain groups. Moreover, since educational qualifications are difficult to verify, local elites could manipulate the rules to exclude their opponents. This has happened with other eligibility criteria: in Gujarat, upper caste male candidates use the rule that a candidate can have no more than two children to disqualify many of their female and low caste challengers.⁷⁵ Hence, minimum educational qualifications would undermine the MoPR's objective to increase representation of women and minorities in local governments.⁷⁶

3. Alternative policy option: Voter awareness campaigns via other media

Printed materials like pamphlets or posters might be an effective medium in urban areas, where literacy rates are high and population density enables one distributor to cover many households in a short length of time. However, printed materials without other forms of media (like street theater) may be less effective in rural areas, where only 43.1% of adults can read a 2nd grade text (**Table 2**), and where villages are remote and houses are spread out. Similarly, lack of access to electronic media may undermine a television and radio campaigns in rural India: in the Rajasthan sample, for instance, only 22.3% of respondents have a television and 6.4% have a radio.

V. Implementation guidelines for a multi-pronged strategy

The previous section described potential policy tools for a multi-pronged strategy to address the high incidence of uneducated sarpanch. The four recommended policy tools – career incentives for sarpanch, increased monitoring of GP finances, voter awareness campaigns, and special training program for sarpanch in reserved GPs – would address the key factors that are most

⁷³ Times of India (2013), [URL](#)

⁷⁴ The Hindu (2005), [URL](#); The Indian Express (2010), [URL](#)

⁷⁵ The Indian Express (2012), [URL](#)

⁷⁶ 73rd Amendment to the Constitution of India (1992), [URL](#)

likely to be driving the policy problem. The interventions would interact to take full advantage of, rather than be negated by, feedback loops between candidate and voter behavior.

This section presents broad guidelines for implementing this strategy. First I identify stakeholders within the MoPR to coordinate the interventions. After that, I discuss important steps to ensure maximum efficacy, including process pilots, impact evaluations, and iterative experimentation of policy options. I conclude with a high-level budget, with options for cost-sharing, for two possible scale-up scenarios: a universal scenario in which the strategy is implemented in all GPs in North India, and a targeted scenario in which the strategy is only implemented in high-priority GPs.

A. Implementation stakeholders

An organizational chart from the MoPR's website is provided in **Appendix 10**.⁷⁷ I have outlined in red the ideal department for coordinating the recommended interventions: the Department for Panchayat Capacity Building under the Joint Secretary for Policy Matters. This department's mandate includes implementing programs for training sarpanch, providing GP offices with administrative support, and improving GP facilities. The recommended interventions in this policy analysis could be cost-effectively integrated into these programs and take advantage of their existing infrastructure, including regional offices and pools of experienced facilitators.

In particular, the Rashtriya Gram Swaraj Yojana (RGSY), the Panchayat Empowerment and Accountability Incentive Scheme (PEAIS), and the Rajiv Gandhi Panchayat Sashaktikaran Abhiyan (RGPSA) under the Department for Panchayat Capacity Building are ideal vehicles for the proposed interventions. RGSY is responsible for providing GP offices with staff to assist sarpanch,⁷⁸ and so the program is in a unique position to create new administrative positions in GP offices for talented former sarpanch. RGSY is also responsible for training newly elected leaders,⁷⁹ and so special training sessions for sarpanch in reserved GPs could be easily integrated into its existing infrastructure. PEAIS is responsible for ensuring that GPs have transparent

⁷⁷ Ministry of Panchayati Raj (2014), [URL](#)

⁷⁸ RGSY Guidelines (2008), p. 2

⁷⁹ *ibid.*

administrative systems,⁸⁰ and could be expanded to accommodate additional monitoring of GP finances. Finally, one of RGPSA's core activities is voter awareness, and so the program has access to a network of local NGOs that could be used to implement additional voter awareness campaigns about the returns to having an educated sarpanch.⁸¹

One risk associated with implementing a multi-pronged strategy across different programs, even within the same department, is lack of coordination between interventions. Since the success of this strategy relies on the interaction of its individual elements, it will be important to ensure that all interventions are being executed simultaneously and with similar effort. To do this, I recommend that the MoPR form a task-force under the Joint Secretary to facilitate coordination of interventions across programs.

B. Testing and refining interventions

1. Strengthening policy design through process pilots

While the recommended interventions are supported by technical, political and administrative analysis, the MoPR should test and refine these ideas before scaling them nationwide. This process will help the MoPR to strengthen the design of each intervention and ensure that resources are not wasted on activities that are ineffective. The first step in this process is to draft an implementation plan that addresses specific design issues: who will be involved in each step of the process, where activities will take place, how funds will flow between administrative levels, etc. This step will help to identify problem areas that could affect implementation. Next, the designs should be piloted in a small number of GPs. At this stage, the purpose is not to assess impact, but to detect and correct logistical issues that were not anticipated in design. These pilots do not need to be conducted at a large scale, but they should be conducted in a variety of settings (well-functioning and poor-functioning GPs, different states) to identify hurdles that may occur in different areas. It is also important that the program responsible for scale-up conduct these pilots, since internal processes may differ across programs.

⁸⁰ PEAIS Guidelines (2005), p. 1

⁸¹ RGPSA Guidelines (2013), p. 17

2. Measuring anticipated effects with impact evaluations

After refining the interventions based on the process pilots, the MoPR should pilot the interventions at a larger scale and conduct impact evaluations to test their efficacy. Researchers from local universities or consulting firms can help the MoPR think through the designs of these evaluations. This stage will help the MoPR to predict the likely impact of the interventions, and determine which should be scaled-up and which should be refined further.

Ideally, the MoPR would identify a set of GPs in which to test these interventions (the number of GPs depends on the number of interventions being tested and other factors), then use a computer program to randomly select some of those GPs to receive the interventions (“treatment” GPs) and some of those GPs to not receive the interventions (“control” GPs). This process helps to mitigate the influence of other factors on differences in outcomes between treatment and control GPs, so that any observed differences can be more confidently attributed to the interventions. Where this is not possible, researchers can help to identify other appropriate designs. For any design, the MoPR should be aware of what kinds of questions can and cannot be answered in order to avoid spurious conclusions that could lead to ineffective programs being scaled-up.

Since there likely are feedback loops between supply and demand factors, the effects of the recommended interventions are unlikely to be additive. It would be useful for the MoPR to test different combinations of interventions in different places, in order to estimate the value added of each element to the overall strategy. This would increase the number of GPs necessary for the impact evaluation pilots, but the additional evidence generated from these pilots would be valuable in crafting an effective scale-up plan.

The key outcome of interest is the proportion of GPs with educated sarpanch. However, this is a long-run indicator that may not vary in the short-term (particularly if there are not elections immediately following the pilots), and so there are intermediate indicators that the MoPR should also use to gauge the success of pilots. Some of these indicators are listed in **Table 6**:

Table 6: Intermediate outcomes of interest for impact evaluations

Objective	Policy option	Indicators of success
Incentivize educated villagers to run for election	Improve long-term career options for sarpanch	<ul style="list-style-type: none"> • <i>Short-run</i>: Number of villagers with high school and college degrees expressing interest in becoming sarpanch in surveys • <i>Medium-run</i>: Number of candidates with high school and college degrees
Incentivize educated villagers (relative to less educated villagers) to run for election	Increase monitoring of GP finances to reduce illicit gains	<ul style="list-style-type: none"> • <i>Short-run</i>: Fraction of villagers who express interest in becoming sarpanch who have degrees in surveys • <i>Medium-run</i>: Fraction of candidates with degrees
Increase voters' perceived returns to having an educated sarpanch	Voter awareness campaigns via street theater	<ul style="list-style-type: none"> • <i>Short-run</i>: Fraction of voters who identify "educated" as one of the most important characteristics of a sarpanch in surveys • <i>Medium-run</i>: Vote share for candidates with degrees
Increase the capacity of sarpanch in reserved GPs	Training programs for sarpanch in reserved GPs	<ul style="list-style-type: none"> • <i>Short-run</i>: Fraction of questions about administration of government programs that sarpanch answer correctly in surveys • <i>Medium-run</i>: Performance indices for major government programs, including MGNREGS and IAY

In summary, the impact evaluations will help the MoPR to determine which package of interventions generates the greatest impact on desired outcomes at the lowest cost. The process of testing and refining policy options by using theory, process pilots and impact evaluations should be iterative rather than linear, with evidence from prior stages used to successively strengthen the design of policy instruments. The scope of testing and refining interventions will only be constrained by the amount of resources that the MoPR can devote to this stage.

C. Budgets for universal and targeted scale-up

Conditional on the activities described in the previous section, the MoPR may choose to scale-up some or all of the proposed interventions. This section presents an approximate budget for a multi-pronged strategy that incorporates all four recommendations. In this budget, the interventions are integrated into the three programs discussed earlier – RGSY, RGPSA and PEAS – and so I assume that set-up costs would be minimal. Line-item costs are based on the costs of similar interventions conducted by the MoPR.

I consider two possible scale-up scenarios: a “universal” scenario where all 130,000 GPs in North India receive the interventions, and a “targeted” scenario where 60,000 GPs in high-priority areas (defined as “economically backward regions” by the MoPR⁸²) receive the interventions.⁸³ For the special trainings in reserved GPs, I assume that 2/3 of GPs are reserved.⁸⁴ For career placement for ex-sarpanch, I assume that there would be take-up in ¼ of GPs. I assume that each intervention would be implemented once per election cycle, and so the budget is in terms of five-year outlays.

Table 7: Five-Year Budget for Recommended Interventions

Activity	Cost per GP*	Universal scale-up		Targeted scale-up	
		Number of GPs	Total cost	Number of GPs	Total cost
Design					
Personnel for task-force team	-	-	12,000,000	-	12,000,000
Process pilots					
Pilot activities	50,000	50	2,500,000	50	2,500,000
Data collection	10,000	50	500,000	50	500,000
Impact evaluations					
Pilot activities	50,000	500	25,000,000	500	25,000,000
Data collection	10,000	500	5,000,000	500	5,000,000
Scale-up					
Career placement for ex-sarpanch	125,000	32,500	4,062,500,000	15,000	1,875,000,000
Increased monitoring	20,000	130,000	2,600,000,000	60,000	1,200,000,000
Voter awareness campaigns	20,000	130,000	2,600,000,000	60,000	1,200,000,000
Special training for reserved GPs	10,000	86,667	866,666,667	40,000	400,000,000
Other					
30% buffer			3,052,250,000		1,416,000,000
Total					
INR		₹	13,226,416,667	₹	6,136,000,000
USD		\$	216,826,503	\$	100,590,164

* Justifications for costs come from the following sources: RGPSA Financial Statements (2013), PEAIS Guidelines (2005), RGSY Guidelines (2008), and voter awareness campaigns that the author has been involved with in Bihar, Rajasthan and Uttar Pradesh (2010, 2011).

⁸² Backward Regions Grant Fund Guidelines, pp. 29-30

⁸³ Rural North India includes the states of Bihar, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand. See this [URL](#) for the number of GPs per state. The recommendations are broadly relevant to the whole country, though it should be noted that the panchayati system is substantially different in other states.

⁸⁴ This varies across states from ½ of seats to ¾ of seats, so I assume 2/3 reservation on average.

Universal scale-up would cost approximately \$216 million, or \$43 million per year, while targeted scale-up would cost approximately \$100 million, or \$20 million per year. In comparison, the annual budget of the MoPR in 2012 was \$877 million.⁸⁵ The universal scenario represents a 4.9% increase in the annual budget, while the targeted scenario represents a 2.3% increase in the annual budget.

Although these interventions do not require a large percentage increase in the MoPR's budget, cost-sharing arrangements are possible. For example, the World Bank has recently partnered with the MoPR's Bihar department to implement the Bihar Panchayat Strengthening Project, for which the World Bank is providing \$84 million.⁸⁶ The MoPR may be able to leverage existing relationships with donors like the World Bank to obtain additional funding for new interventions

VI. Conclusion

Sarpanch play a key role in managing government programs, and the lack of adequate educational qualifications has resulted in sub-standard public service delivery, particularly in the poorest GPs. This policy analysis uses a dynamic supply-and-demand framework to identify three interconnected factors that are most likely driving the high incidence of uneducated sarpanch: a lack of incentives for educated villagers to contest elections, especially due to few career options and social norms; voters undervaluing the returns to having an educated sarpanch; and low educational attainment of minority groups in GPs with gender or caste quotas. Based on this diagnosis, I recommend a multi-pronged strategy that takes full advantage of feedback loops between candidate and voter behavior. I show that the four recommended policy interventions would require a 4.9% increase in the MoPR's annual budget for universal scale-up, or a 2.3% increase for a targeted scale-up in high-priority GPs.

⁸⁵ MoPR Annual Budget (2013)

⁸⁶ World Bank (2014)

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VIII. Appendices

Appendix 1: Datasets used in this policy analysis

Citation	Description	Sample	Link for more information
Banerjee, Abhijit, Esther Duflo, Clement Imbert and Rohini Pande. Empowering Female Leaders and Voters in Rajasthan. J-PAL project. (2011)	Survey of sarpanch candidates	1,958 candidates from 247 GPs in Bharatpur, Dholpur and Karauli districts in Rajasthan	link
<i>ibid.</i>	Survey of incumbent sarpanch	156 incumbents from same GPs who served from 2005-2010	link
<i>ibid.</i> (2010)	Survey of voters	10,088 voters from 5,044 households from same GPs, ~20 voters per GP	link
<i>ibid.</i>	Survey of MGNREGS project sites	3,196 MGNREGS project sites measured, with GPS	link
Banerjee, Abhijit, Donald Green, Jeffery McManus and Rohini Pande. Voter Awareness Campaigns in Bihar and Uttar Pradesh. J-PAL projects. (2011)	Survey of voters	5,522 voters from 280 polling stations	link
Census of India (2011)	Census of all households	Data at the village-level on all villages in India	link
Census of India (2001)	Census of all households	Data at the village-level on all villages in India	link
Mahatma Gandhi National Rural Employment Guarantee Scheme Data Public Data Portal (2014)	Detail on MGNREGS projects	GP-level data on all MGNREGS projects since 2008	link
State Election Commission of Rajasthan	Results from 2010 election and basic demographics of all candidates for sarpanch	Candidate-level data for all GPs in Rajasthan	link

Appendix 2: Survey estimates of sarpanch literacy

The GPs in the J-PAL survey were selected randomly from among all GPs that were not reserved for women in 2010. Hence, the data from winners in the candidate survey provides an unbiased estimate of sarpanch literacy in unreserved GPs. To get an estimate of sarpanch literacy in GPs reserved for women, I used data from the incumbent survey for the subsample of GPs that had been reserved in the previous round (2005 – 2010). To account for the fact that literacy might have increased during this time period, I added to this estimate the change in literacy rates among incumbents who were elected to unreserved GPs and the literacy rate of winners in the candidate survey.

The final estimate of sarpanch literacy of sarpanch literacy in these districts was calculated as:
(Fraction of GPs Reserved for Women) * (Literacy Estimate for Sarpanch in GPs Reserved for Women) + (Fraction of GPs Not Reserved for Women) * (Literacy Estimate for Sarpanch in GPs Not Reserved for Women)

Appendix 3: Effect of sarpanch education on GP literacy – Regression tables

	Change In Fraction of Adult Population Who Is Literate (2001 to 2011)		
	Total Population	Males	Females
	(1)	(2)	(3)
Sarpanch from 2005-2010 had a high school degree (SEC)	0.024*** [0.007]	0.008 [0.005]	0.040*** [0.009]
Constant	0.319*** [0.017]	0.281*** [0.019]	0.300*** [0.012]
Observations	377	377	377

NOTES

1. *** p<0.01, ** p<0.05, * p<0.1
2. Robust standard errors are in brackets.
3. The observation level is the GP.
4. All regressions control for sarpanch age, gender and caste.

Appendix 4: Missing data imputation for education of sarpanch candidates

The data on education levels of sarpanch candidates comes from two sources at the Rajasthan State Election Commission: a candidate-level dataset that is missing education data for 62.8% of candidates, and a panchayat samiti (sub-district)-level dataset with the number of sarpanch in each category of educational attainment.

To impute missing data in the candidate-level dataset, I followed the following steps:

1. Regress candidate education level on gender, caste and age for non-missing observations
2. Get predicted probabilities of candidate levels for winners and losers.
3. Using SEC counts for sarpanch education by PS, impute missing education for sarpanch:
 - a. For each PS, construct list of education levels of sarpanch
 - b. Subtract the number of sarpanch with each education level in that PS that is not missing education.
 - c. For all sarpanch in a PS who are missing education, sort in order of lowest predictive probability to highest.
 - d. Assign from PS list to dataset of missing sarpanch
4. Impute missing data for losers: For each PS, match each loser's predicted probability with the closest winner's predicted probability in that PS, then assign the loser the same education level as that winner.

Appendix 5: Balance tests for regression discontinuity analysis

Variable	p-value*
Person-days pre-election (MGNREGS 2009)	0.42
Total expenditures pre-election (MGNREGS 2009)	0.27
Fraction person-days by women workers pre-election (MGNREGS 2009)	0.94
Fraction person-days by SC/ST workers pre-election (MGNREGS 2009)	0.99
Fraction expenditures spent on materials pre-election (MGNREGS 2009)	0.85
Total GP population (Census 2001)	0.90
GP literacy rate (Census 2001)	0.93
Education facilities (Census 2001)	0.76
Infrastructure index (Census 2001)	0.49

* The p-value is the probability that the difference in the variable between GPs that barely elected the literate candidate and GPs that barely elected the illiterate candidate is due to random chance

Appendix 6: Effect of sarpanch education on MGNREGS outputs – Regression tables

	Change in MGNREGS indicator before and after the elections	
	Total expenditures (Rs '00,000s)	Percent of projects that are delayed
	(1)	(2)
High school degree: Difference between winner and runner-up	5.478 [3.735]	-2.408* [1.262]
Observations	283	284

1. *** p<0.01, ** p<0.05, * p<0.1

2. Robust standard errors are in brackets.

3. The observation level is the GP.

4. All regressions control for sarpanch age, gender and caste, and include PS fixed effects.

5. The independent variable takes on values +1 (e.g. if the winner was a high school graduate and the runner-up was not), 0 (if both candidates were high school graduates) or -1 (if the winner was not a high school graduate and the runner-up was).

6. The coefficient on high school degree is Rs 5.4 lakh, and since the variable is +1 if the winner was literate and the runner-up was illiterate, and -1 if the winner was illiterate and the runner-up was literate, then the total effect size is $5.4 \times 2 = ₹10.8$ lakh or ₹1.08 million

Appendix 7: Effect of sarpanch education on corruption – Regression tables

Buffer	Dependent Variable: Number of MGNREGS Projects Started Post-Elections Within Buffer		
	1000m	750m	500m
Candidate is Winner	0.814***	0.791***	0.632***
	[0.309]	[0.240]	[0.175]
Candidate has High School Degree	0.011	0.058	0.139
	[0.335]	[0.261]	[0.190]
Candidate is Winner and has High School Degree	-0.725	-0.611*	-0.446*
	[0.465]	[0.362]	[0.264]
Observations	190	190	190
Runner-up Mean Number of Projects within Buffer	1.579	1.105	0.632

1. *** p<0.01, ** p<0.05, * p<0.1

2. Robust standard errors are in brackets.

3. The sample is restricted to GPs where the margin of victory was less than 5% of votes cast.

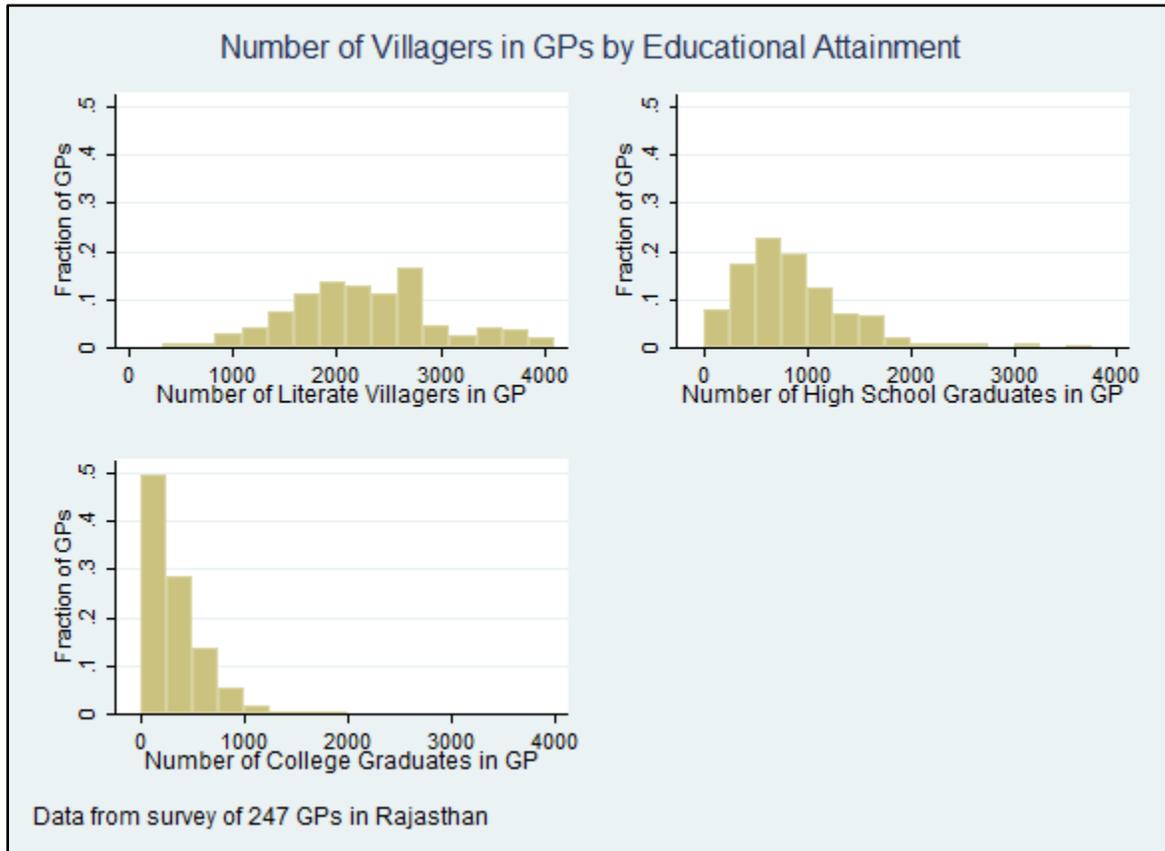
4. All regressions control include district fixed effects and control for sarpanch age, gender and caste.

Appendix 8: Correlation between GP infrastructure and sarpanch education

	Sarpanch from 2005-2010 had a high school degree
Infrastructure Index (2001)	0.627** [0.257]
Constant	-0.114 [0.190]
Observations	156

1. *** p<0.01, ** p<0.05, * p<0.1
2. The Infrastructure Index is aggregated from five village-level infrastructure parameters from the 2001 Census: irrigation facilities, drinking water facilities, power supply, medical facilities and educational facilities. The aggregated indicator is then standardized to have values from 0 to 1.
3. Robust standard errors are in brackets.
4. Includes district fixed effects.

Appendix 9: Number of educated villagers in sample GPs



Appendix 10: Ministry of Panchayati Raj organizational chart

