Who is getting the public goods in India: Some evidence and some speculation

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The way you grow up in India, it has long been known, depends on where you grow up. The average child growing up in Orissa in the 1980s was seven times more likely to die in infancy than his or her equivalent in Kerala.[2] His or her mother is four and half times more likely to die in giving birth if she were in Assam than she would be had she been in Kerala.[3] And if she happens to be a girl and born in Rajasthan in the 1980s, the likelihood of her being literate by the time she was 14 was about a quarter of what it would have been had she grown up in Kerala.[4]

This is, as Dreze and Sen (1995), among others, have argued is entirely what we might have expected: In 1991, rural Kerala had 17 times as many hospital beds per head as Orissa and 10 times as many as Assam. The fraction of people in rural Orissa with access to medical facilities in their village in 1981 was less than 11% compared to 96% in Kerala. In 1991, 93% of villages in Kerala had a middle school but the corresponding fraction in Orissa and Assam was less than 25% and in UP it was less than 15%.

What is less often emphasized but equally striking is the extent of variation within a single state: According to the 1991 census, less than 7% of the villages in Vishakhapatnam district in Andhra Pradesh had middle schools and just over 46% had some educational facility, as against 55% and 100% in Guntur. The district of Rangareddy had only 6% of villages with primary health sub-centers as against almost 40% in Anantapur. Less than 1% of villages in Vishakhapatnam had tapped water compared to 59% in West Godavari. Forty-eight percent of villages in Vishakhapatnam were using electrical power as against essentially 100% in Krishna. Twenty percent of

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[2] Based on the 1991 census.

[3] Dreze and Sen (1995).

villages in Vishakhapatnam had a post office and 25% had a metalled road, as against 93% for both in Guntur.

2. Potential determinants of public good access

What, if anything, marks out these places that seem to be so dramatically missing out on their fair share of these public goods? One part of the answer is surely geography. Where it rains a lot, storing water may be less of any issue than better drainage. It may change the disease burden, making certain types of health care more important. More rain also has the potential to make the land more productive, making it easier to sustain higher population densities, which, in turn, affects the cost of making public goods more accessible.

Being coastal, as Sachs and Werner have emphasized, can change the way one lives one's life: One is naturally more exposed to international trade, and trade brings with it ideas from outside. One might imagine a coastal population being more assertive about its demands for public goods. One might also expect the coast to be a different agro-climatic zone, with corresponding differences in the demands for public goods. Other aspects of the geography may also make a difference: It, for example, is more difficult to build roads in mountainous areas and farming rocky hillsides is obviously very different from agriculture in the river valleys.

History, one imagines, must have also left its mark: While nothing in India has entirely escaped the impact of colonial rule, one might imagine that the areas that were never formally under British rule (the so-called Princely states) provide a potentially interesting contrast. The explicit policy of the colonial state was to invest in infrastructure only where its direct economic interests could be expected to be served by such investment, at least outside the urban areas. Railways, irrigation and roads were built only where such investment could directly contribute to the expansion of trade, and it was largely taken as given that if people in rural areas wanted to have access to modern medicine and "English" education, they should be prepared to travel to the nearest big town. While this was not necessarily what the people wanted, the colonial state was powerful enough not to need to embrace populism.

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[4] Dreze and Sen (1995).

The Princely states obviously faced rather different compulsions: Some of them felt the need to do something for their people, and even those who did not could not afford too much discontent inside, since their power was rather limited and there was always the risk that the British would, as they had in the case of Oudh, invoke mismanagement as a reason to swallow them up. Of course, the need to limit popular unhappiness does not necessarily produce investment in schools and roads. It could also lead to an increased reliance on "feudal" or religious structures, as means of social control: This could lead to less investment in schools, given that schools are often, not unreasonably, seen as the fount of radical ideas. Either way, however, one might expect a different pattern of public investment in the princely states. Moreover, it is plausible that these states fostered a rather different popular attitude towards the State and generated a quite different pattern of political alignment and wealth and income inequality among their people.

I have argued elsewhere (Banerjee and Iyer (2002)) that the pattern of political alignments and the distribution of income and wealth may also be expected to vary systematically within British India: This is because there were three quite different types of land tenure systems within British India. These systems mainly defined who had the liability for paying the land tax to the British and by implication, who had "property rights" on the land. The systems were: landlord based systems (also known as zamindari or malguzari), individual cultivator-based systems (raiyatwari) or village-based systems (mahalwari). The map in Figure 1 illustrates the geographic distribution of these areas.

In the landlord areas, a landlord was put in charge of the revenue collection, and the British administration had no direct dealings with the cultivating peasants. Landlords were in effect given property rights on the land, though some measures for protecting the rights of tenants and sub-proprietors were introduced in later years.

Under the raiyatwari system the revenue settlement was made directly with the raiyat or cultivator. In these areas, an extensive cadastral survey of the land was done and a detailed record-of-rights was prepared, which served as the legal title to the land for the cultivator. Revenue rates were calculated as the money value of a share of the estimated average annual output. This share typically varied from place to place, was different for

different soil types and was also adjusted in response to changes in the productivity of the land.

Under the mahalwari system, village bodies which jointly owned the village were responsible for the land revenue. The composition of the village body varied from place to place: in some areas it was a single person or family and hence very much like the landlord system, while in other areas, the village bodies were larger and each person was responsible for a fixed share of the revenue. This share was either determined by ancestry (the pattidari system), or based on actual possession of the land (the bhaiachara system), the latter being very much like the raiyatwari system.

Why might we expect public investment to vary between areas with more or less landlord control? In particular, why would these differences persist and not be wiped out as soon as the landlord class was abolished in the early 1950s? One obvious and potentially persistent effect of being a landlord area is on the distribution of land and wealth. Bagchi (1976) suggests one possible mechanism: Since the landlords were given the authority to extract as much as they wanted from their tenants, the gains in output or productivity in these areas were more likely to be concentrated in a few hands. Landlord areas were also the only areas subject to the Permanent Settlement of 1793 (which fixed rents forever in nominal terms) and even where the settlement was not permanent, the political power of the landlord class made it less likely that their rates would be raised when their surplus grew. Therefore, we would expect a much more unequal distribution of wealth and of course, land, in landlord areas. By contrast, in individual cultivator areas, rents were typically raised frequently by the British in a attempt to extract as much as possible from the tenant. There was, as a result, comparatively little differentiation within the rural population of these areas until, in the latter years of the nineteenth century, the focus of the British moved away from extracting as much they could from the peasants. At this point, there was indeed increasing differentiation within the peasant class, but even the smaller peasants could benefit from the increases in productivity. We would thus expect a more equal distribution of land and wealth in the non-landlord areas. This effect may have been reinforced by another factor, also pointed out by Bagchi. He argues that in the landlord areas, the British handed over a significant part of their political and judicial power to the landlord. This allowed landlords to impose terms on

the peasants that they would not have been able to otherwise and contributed to the impoverishment of the peasantry.

The data we have confirms these expectations: We do find that provinces with a higher non-landlord proportion have lower Gini measures of land inequality in 1885. Even as late as 1990, the size distribution of land holdings looks quite different across these two areas: 64% of all land holdings in landlord areas were classified as "marginal" (less than 1 hectare), while this figure was 50% in individual-based districts. Further, 48% of all holdings are small to medium sized (1-10 hectares) in individual-based areas, but only 35% in landlord areas. There is no significant difference in the proportion of extremely large holdings, which is probably due to the impact of land ceiling laws passed after Independence.

The land and wealth distribution matters for public investment for at least three reasons: First, because it affects the kinds of private investment that people do, which in turn affects the demand for public investment---for example, those who grow sugarcane, a relatively capital intensive crop, will also demand irrigation. Second, because it affects the balance between those who cultivate mainly their own land and those who cultivate other people's land. Those who mainly cultivate other people's land probably care less about investments that make agriculture more productive, at least relative to programs that redistribute land to landless. Their political energies may therefore be directed in a rather different direction. Finally, the fact that the wealthy and therefore politically powerful in the landlord areas were often not themselves cultivators, weakened the political pressure on the state to deliver public goods that were important to farmers.

It is also plausible that the nature of the settlement affected the nature of political power in the post-independence era. If we accept the argument, mentioned above, about the landlords wielding extra-economic power, it is easy to imagine that this would have created antagonistic relations between the peasants and the local elites. It is plausible that this limited their power to work together even after the basis for the conflict was removed. Indeed, if it created a culture of antagonism, it may even have ramifications outside agriculture, such as in their ability to demand schools, health centers, etc.

Finally, we have already noted that many landlord areas had permanently fixed revenue commitments and also that it was more difficult to raise rents in landlord areas

due to the greater political power of large landlords. This meant that the Colonial state had more stake in the economic prosperity of non-landlord areas, since this could be translated into higher rents. This is reflected in an increasing number of legislations trying to protect the peasants from money-lenders and others in these areas starting in the second half of the nineteenth century. It also meant that the state had more reason to invest in these areas in irrigation, railways, schools and other infrastructure.

This being India, we would also expect caste and religion to play a role. These might matter for three reasons: First because certain castes, such as the designated scheduled castes and scheduled tribes, have traditionally been discriminated against, and while such discrimination is now illegal, it is not hard to imagine that it persists in many places, making it harder for these groups to get their fair share. Moreover, a consequence of past discrimination is that these groups are now poorer and less educated than other groups that they have to compete against for the favors of the state, which may make it harder for them to get what they want. Second, because of a history of antagonism between different castes and between different religious groups, the potential for collective action may be relatively limited.[5] Third, even if they can work together, their priorities may be very different: The high castes, who have always had access to education, may care less about the adult literacy centers that the scheduled tribes want, than about getting a new junior college.[6]

Finally, it is plausible that it is easier to deliver public goods in more densely populated areas. If people live far from each other and providing public goods access at any one location has a significant fixed cost, it is harder to justify trying provide public goods to all of them.

3. What really matters for public good access?

One way to answer this question is to go back to Andhra Pradesh and to try to see if we can explain away the very large differences reported above. Figures 1a through 1f, report the results of such an exercise, for six selected public goods representing the six categories of public goods reported by the Indian census---education, health, water,

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[5] Easterly and Levine (1997) have argued that a similar longstanding antagonism among tribes may explain the poor performance of most African states.

[6] This is similar to the argument in Alesina, Baqir and Easterly (1999).

power, post and telegraph and communication. All of these except communication should be self-explanatory: Communication covers roads, buses, trains and related publicly provided services. The goods we chose are the fraction of villages that have access to middle schools, primary health care centers, tapped water, electrical power use, any post and telegraph facility and metalled ("pucca") roads. The choice reflected our judgment about the kinds of goods within each category that seem to be in high demand---for example, we chose middle schools, rather than primary schools because by the 1990s, most villages (92%) in A.P. do have primary schools.

The first panel of each of figures 1a through 1f shows the distribution of the particular public good variable for the 22 districts in A.P. (middle school in 1a, primary health care center in 1b) etc., centered around its mean. The second panel shows the distribution after we control for the effects of two key geographical variables---being coastal and the average level of rainfall. The distribution tightens visibly in four of the six cases, but for electrical power use, things if anything get worse (there is no effect on the roads variable).

The third panel shows what happens if we also try to control for historical differences. The variables we use are the proportion of land that was not under the landlord based system and an index which says whether or not the district was under British rule. To determine the former we used data from district-level Settlement Reports compiled by British administrators at various points of time, as well as other historical sources. Most of the Settlement Reports we use are from the 1870's and 1880's, and were compiled after a fairly detailed survey of the district. Depending on the historical information available, our measure of non-landlord control is either the fraction of villages or estates or total area not controlled by landlords.

Once we add these variables, the distribution tightens dramatically for middle schools, primary health centers, post and telegraph facilities and roads. There is no effect on taps and the effect on electrical power is hard to interpret.

The fourth panel shows what happens when we control for the caste differences as well: We control for the share of scheduled castes and scheduled tribes in the rural population, and index of ethnic fractionalization taken from Banerjee and Somanathan (2001). This index measures the probability that two people drawn at random from the

population would belong to the same group. To calculate this index we had to go back to 1931 census, which is the last census that gives really detailed caste information. The data is available by districts, separately for each of the British Indian provinces and princely states. While state boundaries were redrawn after independence, district boundaries remained more or less intact and we can therefore use this data to construct caste shares for current districts. For new districts created by subdividing old ones, we weight the caste figures from the original district according to the area of the new district which was taken from them.

The number of castes listed in the 1931 is very large and we restrict ourselves to Hindu castes which form more than 1% of the population of each state or province in 1931. Putting data for different states together, we have a total of 185 caste groups. We make one major adjustment to this data to account for the increase in the proportion of Hindus after 1931. Some districts had significant Muslim populations that migrated to the newly created nation of Pakistan around the time of Indian independence in 1947. We scale up the numbers in each caste group, based on the population share of Hindus in the current census. This assumes that within Hindus, different castes grew at similar rates over time.

To complete the calculation, we need to decide how to treat other religious groups. There is no perfect way to do this, but we decided to ignore caste differences among non-Hindus and to treat each non-Hindu religious community---Buddhists, Christians, Jains, Muslims and Sikhs---as single homogenous groups.

The results in panel four show that adding the caste variables does tighten the distribution in almost every case, with the impact in the case of taps being the most striking. Finally panel five shows the effect of controlling for the extent of urbanization, as a way of measuring population density. Once again there seems to be a significant impact, except perhaps in the case of primary health centers.

Figure 1g shows a parallel exercise, with the one difference that we are looking at rural literacy rates, which is an outcome of public investment rather than a measure of investment itself. The patterns we see are very similar.

Echoes of these results show up when we expand the list of public goods. If we start with the entire list of infra-structure measures that are reported in the census and

eliminate the ones that are probably not man-made (rivers, fountains, etc.) and the ones that are almost surely private (nursing homes, registered medical practitioner, etc.), we end up with a list of thirty-three plausibly public goods. We then estimate a regression equation that combines all the variables already mentioned, for each of these thirty-three public goods, still using data from just the twenty-two districts in A.P.

Rainfall almost never has a significant effect in these regressions, but being coastal has a positive effect for nine of the goods and negative effect for two more. The proportion of land that was not under landlords has a significant effect for sixteen of the goods and is always positive, which is impressive given that we have twenty-two data points and have to estimate eight coefficients. Being non-British is also typically positive when it is significant (positive in 12 cases and negative in one). The only other variable that shows up relatively often in the regressions is the share of the scheduled tribes, which is negative in seven cases and positive in two. Neither the share of the scheduled castes nor the fragmentation index shows up more than a couple of times.

Table 1a through 1g presents the results from an even more elaborate exercise where we estimate a similar relationship for the country as a whole. We still have the same list of thirty-three public goods, but our sample now is the 284 districts in the 16 most populous Indian states. This allows us the luxury of using a much more elaborate set of geographical controls---we now also include latitude, altitude, an index of whether the district has a lot of steep slopes, the maximum and minimum temperature and three indices representing soil types. We also add the share of Brahmins, Muslims, Christians and Sikhs. A measure of the inequality of the land distribution is also included, in an attempt to pick up anything that the non-landlord measure has not picked up.

The results, for the most part, conform to the patterns that we found before: Being non-landlord comes out positive, as does being on the coast, and to a lesser extent, being non-British. Having a large fraction of scheduled castes or tribes or Muslims looks like a disadvantage, as does being fragmented. More surprisingly, having a large fraction of Brahmins does not go with greater access to public good and inequality in the land distribution, while often statistically significant, is actually more often positive than negative. And population density clearly goes with improved access to public goods.

Table 1h results on literacy: Being on the coast and having more rain go with higher literacy as does being in a non-landlord area, at least for men. Being in non-British or scheduled tribe dominated areas makes you less likely to be literate, but being in scheduled caste dominated areas has no significant effect.

4. What should we make of these results?

The trouble with many of these results is that it is dangerous to take them at face value. The effects of geography are of course what they are, but none of the other measured effects need be what they say they are. For example, the effect of being a non-landlord area could simply be the effect of whatever made it appropriate for it to be a non-landlord area. Banerjee and Iyer (2002) argue at some length that this is in fact not the case as far as the non-landlord variable is concerned. At the heart of their argument are two observations: First, when we look at agricultural yield data it becomes clear that the areas that became non-landlord were actually less productive at least until the first part of the last century. It is only after independence that these areas clearly start becoming more productive than the landlord areas. In other words, their current success, at least in agriculture, was not prefigured by their historical performance. Second, areas that were conquered later were much more likely to be non-landlord, both because the British were increasingly more comfortable with making their own deals with peasants and because of shifts in the ideology among the people ruling India. One can therefore look at the effects of variation in the non-landlord share that are the result of being conquered later. Indeed one can even control for any direct effect of being longer under British rule by using the fact that areas conquered between 1820 and 1856 were much more likely to be non-landlord than areas conquered either earlier or later. This procedure has the additional advantage that the date of conquest is much more precisely measured than the share of land not under landlords, and therefore the estimates based on using this procedure are likely to be less affected by measurement error.

A similar justification for the non-British variable can be found in Iyer (2002). She notes that certain parts of India were taken over because their ruler died without a natural heir under the so-called Doctrine of Lapse, but the application of the Doctrine of Lapse was suspended in 1858. As a result, the places where the ruler died without an heir

after 1858 (and therefore were not taken over) constitute a legitimate control group for the places that did get taken over under the Doctrine of Lapse and the difference between the two groups gives the correct estimate of the effect of British rule. She shows that the true effect is always larger than what she would have got by naively running a regression with a non-British dummy in it. This implies that our estimates are also probably biased downwards, i.e., the non-British effect on public investment is, if anything, more positive than our results suggest.

We do not have a comparably tight justification for any of the other variables in the regression. The caste and religion variables, being measured in the 1930s, are presumably not subject to the reverse causation problem ("areas that have better infrastructure attract or retain more high castes"), given that most of the expansion of public goods happened after independence. However one still needs to worry about whether these variables reflect some characteristic of the area that also affects the caste and religion variables, either through differential migration or differential fertility rates. The fact that we have detailed controls for a range of geographical characteristics does make this less plausible but in the end we have to make a judgment. This is, of course, all the more true when we come to things like the Gini coefficient and population density, which clearly reflect the way things are going in that area.

What, after that long caveat, do the results actually tell us? The effect of being non-landlord is almost always positive, which tells us that landlord dominated areas are the wrong places to grow up. The effect is often large. In Banerjee and Iyer (2002) we estimate a specification which includes only the districts of British India and uses the strategy, sketched above, of only comparing places that got different systems because they were conquered at different times. We find that, even after including the largest available set of geographical controls, being an entirely non-landlord district increases access to primary schools by 50%, access to middle schools by 75% and access to primary health care centers by 100%. The corresponding increase in the average literacy is 50% and infant mortality rates fall by two-thirds.

The effect of being non-British is, in effect, a comparison of an average district in a princely state with an average district in British India that is totally landlord dominated. Our results suggest that being in a former princely state gives you more access to public

goods than being in a landlord dominated area, but not necessarily more than being in a ryotwari district.

That the effect of having a large proportion of scheduled tribes is negative will not surprise anyone familiar with India and may not therefore demand the same level of statistical scrutiny. The size of the effect is however striking: Using the estimated coefficients, an all scheduled tribe district will have 25 percentage points less villages with middle schools and tapped water than the average district, which just happens to have middle schools and tapped water in 25 percent of its villages. The effect of having a lot of Muslims is less strong but perhaps also not surprising, given all the other evidence on the relative disempowerment of Muslims in India. That the effect of fragmentation and that of having lots of scheduled castes are negative is also plausible, except that we do not find a corresponding pattern in the A.P. data. To understand better what is going on here, we ran the same regression with state fixed effects, in effect restricting the comparison to districts within the same state. The Scheduled caste effect now more or less vanishes while the fragmentation effect is substantially diminished and about equally likely to be positive or negative. Most of the other effects persist, though to a lesser or greater extent. This suggests that the scheduled caste effect today comes from the fact that states where scheduled castes are more numerous function less effectively, but within each state, the scheduled castes are not doing substantially worse. The same is also probably true of the fragmentation effect, though, given that it is now positive in several cases, the interpretation is less clear.

The fact that Brahmin dominated areas do worse than average, is more puzzling. One possibility is that Brahmin dominated areas have an elite (the Brahmins) that is particularly dissociated from the masses and only use their political energies to capture what may be called elite public goods (because they already have everything they could have got from the government in their own neighborhoods). This is consistent with the fact that the Brahmin effect is very strongly positive in the cases of metalled roads, electricity for domestic use, tapped water[7] and colleges[8], which are all "elite" goods, but

[7] Though in the specification reported here for tapped water, it is not significant.
[8] Not reported here since we are not sure it is public good.

mostly negative otherwise. Unfortunately, the effect on telephone connections is negative, which makes this theory somewhat less compelling.

The effect of the Gini coefficient here is not easy to interpret since we have already argued that being a non-landlord area was one reason why the land distribution would be different. Interpreting the effect of population density is equally problematic but it does conform very well to what everyone would expect.

Finally it is worth emphasizing that the regressions do rather well in predicting where the public goods are located: It explain up to three-quarters of the variation.

And therefore....?

If there is one thing that comes out of this data, it is the fact that access to public goods is substantially a matter of who can extract them from the political system. Most things that we associate with a lack of political effectiveness---class conflict as measured by landlord domination, high proportion of traditional disempowered groups, ethnic fractionalization---are also good predictors of lack of access to public goods. We would not expect many to be surprised by this, but the magnitudes are still striking, given the fact that India is a democracy with a strongly egalitarian ideology.

It is not our intention to imply that this is the end of the story---that these differences are necessarily here to stay unless there is radical social change. Clearly certain types of intra-state differences are smaller than they used to be: In particular, scheduled caste areas do only marginally worse than the state average. And clearly there are agencies both within and outside the government that have the will and the opportunity to make a difference. The political economy of the Indian State has always allowed some space to those who have found the right language to challenge the system, as the Chipko movement eloquently testifies.

But it is difficult to be confident that the differences are all about to be erased. Scheduled tribe areas are not converging to the national average in any obvious way. Nor are the landlord areas—in fact in Banerjee and Iyer (2002), we show that in terms of agricultural yields and investment (which includes public investment) the landlord areas have been falling behind the non-landlord areas over the last forty years.

As we see it, there are several reasons why we should take this evidence seriously. First, it serves as an important warning against the view that we should not worry about the adverse distributional consequences of the recent shifts in policy. To the extent that it creates groups that are economically and/or politically disempowered, there is always the danger that when these groups eventually manage to acquire enough political power to try to reclaim what they see as their fair share of the pie, the process that this unleashes could derail the entire process of development. This is clearly one plausible interpretation of what went wrong in the landlord areas and the caste fragmented districts---their problem may be that they are, in manner of speaking, too busy righting all the wrongs of yesterday to focus on what would give them a better tomorrow. There is a little bit of direct evidence that supports this view: In Banerjee and Iyer (2002), we show some evidence suggesting that the landlord districts do much better than the non-landlord districts in terms of redistributing land and yet end up doing worse on poverty reduction. In Banerjee and Duflo (2001), we show that the cross-country evidence is also sympathetic to the view that the short-run effect of any major redistribution is to reduce growth. This is also perhaps what is behind the observation made above, that scheduled castes are not doing too badly compared to the state average, but states with high proportions of scheduled castes are doing systematically worse. It is conceivable that the political movements that empowered the schedule castes unleashed a set of conflicts that have, for the time being, paralyzed governments in those states. This is not say that the process of empowerment is always going to lead to worse outcomes at the state level---it is entirely possible, for example, that the process of empowerment of currently disfavored groups will eventually lead to a politics where there is less waste simply because there is more competition. But the short run effects can be dire, and there is no evidence that long run effects are necessarily good. To the extent that the current process of growth is creating new marginalized groups and reinforcing the marginalization of groups that are already marginal, there is much to worry about and probably a lot to do.

Second, the fact that inter-state differences are in many cases a big part of the story is worrying given that a large fraction of state governments seem to be either bankrupt or totally paralyzed or both. It is true that state governments are becoming less important for some public goods with the movement to panchyati raj, but a lot still

remains in their hands (including money) and in any case, what is to prevent the same pattern being reproduced at the level of the panchayats. In this context, it is worth revisiting the issue of decentralization: If the problem is that people have trouble working together, decentralization can help if it gives more authority to relatively homogenous groups. If however the real conflict is at the village level---say, between the landless who still remember what the current landlord's grandfather had done to their grandfather---then pushing the authority down to the village level might simply bring out the worst in both sides. Centralization, by forcing people to build broader coalitions, may actually help: For example, it is entirely possible that the same landless may feel the need to ally themselves with the middle peasants in another village, and as a result may start taking a less narrow view of their options. Moreover, there may be an important role for targeted initiatives to break the logjam that is holding back the state, district or village. Ideally, such a program would offer enough new options to hitherto marginalized/embattled groups to make it attractive for them to refocus their energies away from simply fighting, and this could start a process of reintegration. Certainly this has been the thinking behind the recent national programs in Peru and Mexico (particularly in Chiapas) aimed towards reintegrating indigenous people. Moreover, while centralization has a bad press these days, Chin (2001) shows that Operation Blackboard, the one large federal intervention in the education sector in India, was actually a moderate success: She concludes that between 3 and 7 million additional girls either became literate or completed primary school because of the program.

Third, the data that we have does not tell us much about the quality of the actual public services that are being delivered. However, where we do have evidence, it seems to suggest that quality behaves in much the same way as the availability of public goods---literacy is also lower in the places where we expect greater conflict (see Table 1h) as is infant survival (not shown here but see Banerjee and Iyer (2002)). Low quality of public goods has the potential to set off a vicious cycle: When public goods such as schools, colleges, hospitals and power supply in rural India are not what the elite has come to expect, those who can afford it move to the city or at least make sure that they do not need to use the village infrastructure. As the elite exits from the system, two things happen. The rural population risks being left without a leadership that can mediate the

various conflicting interests and deal with the state bureaucracy, which makes it harder to improve the infrastructure. And the existing infrastructure may function less well, because the teacher and the doctor now live in the city and have to commute to the village: In particular, they may find it very tempting to be absent on occasion, now that most people with the social clout to kick up a fuss about absenteeism have already opted out. All of which makes it more tempting to try to opt out.

Of course, it is not clear that even those places where the existing mechanisms are working as well as they could be reasonably expected to, are going to be able to retain their elites. But it is clear that if we are to have a chance we have to start dealing with the problem now---as more and more of the elite exit from the system, the problem gets harder to solve and it becomes increasingly likely that large chunks of rural India will turn into traps, with infrastructure so bad that only those who are too poor to move and too powerless to challenge the system continue to be there.

There are of course many people who are trying to do something about it. The various non-formal education programs and health worker programs are being showcased as the prototype of a possible solution: By having teachers and health workers who are from the village and from the same social group as those they serve, they hope to cut down on absenteeism and strengthen local control over the programs. Unfortunately this comes at the cost of having to use teachers who have eight or ten years of education themselves and health workers who have a week's training. It is not at all clear that the quality of public services that are so generated is high enough to slow down the polarization process.[9]

One way to improve quality is to make the teachers and the doctors (and others like them) answerable to those who are supposed to benefit from their services. This is clearly the trend in India, but no state to our knowledge has as yet taken the politically difficult step of giving the panchayats or parents groups the power to fire delinquent government servants.[10]

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[9] Banerjee, Jacob and Kremer (2000) find that doubling the number of teachers in non-formal education centers has very little effect on test scores, which suggests that the average teacher is not of the highest quality.

[10] They have however taken the important step of requiring a certain fraction of powerful positions in the panchayats (including the position of pradhan) be reserved for women (one-third) and scheduled castes and

The alternative is to rely more on market incentives. Going to a full-scale market-based system like Medicare/Medicaid in the U.S., where the government pays private providers who bill them for services provided to private citizens, is not going to work---the scope for corruption and abuse is simply too large. It may be possible to try a more limited market-based scheme where reputed doctors are paid a large lump sum amount to compensate them for coming to a particular village (paid by the panchayat, on the spot) and thereafter are allowed to charge each patient what the market would bear. Given that even poor people do spend substantial amounts on health care,[11] the fact that they would have to pay a price may not be too much of a problem. On the other hand, it may exclude exactly those who need the help the most—the poorest and those least capable of judging the quality of the heath-care they are getting.[12]

Similar concerns about alternative ways to improve the present system come up, of course, in the case of every single public good. It seems clear that at this point we need to innovate and indeed, there is a lot of innovation going on, mainly in the NGO sector. These innovations need to be evaluated rigorously and the best practice needs to be disseminated. Neither of these is easy: We lack a culture where there is enough respect for what one might call the craft of social policy evaluation---mundane but vital things like how to measure success, how to set up the right control group.... And we seem not to recognize that perfection is the enemy of the scalable and the easily reproducible---if we insist that the programs be perfectly attuned to their environment, we will end up with programs that can never be imitated. This, for us social scientists, may well be where the next big fights are.

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tribes (in proportion to their share in the population). This will help making sure that the effectiveness of the panchayat is not undermined by collusion between the typically high caste government officials and the higher castes in the village. (Chattopadhyay and Duflo (2001)) provide some interesting evidence showing that the devolution of authority through this system does change the way the panchayats function.)

[11] See Das (2001).

[12] See Das (2001).

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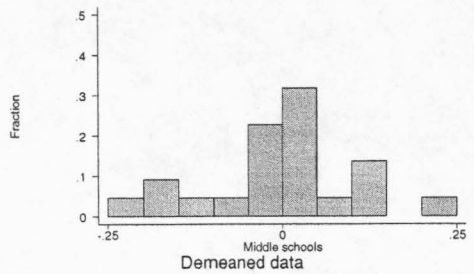

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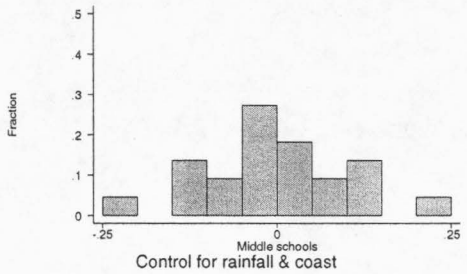
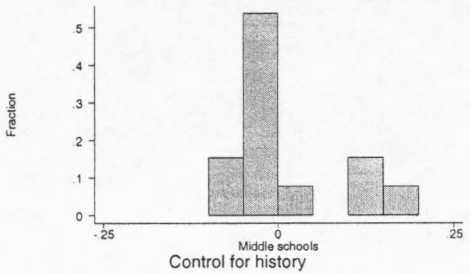


Control for rainfall & coast



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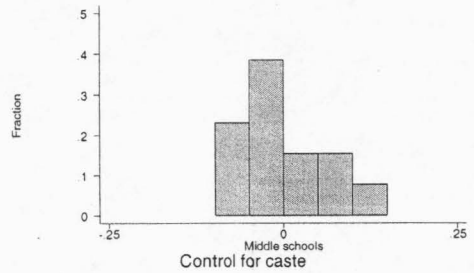

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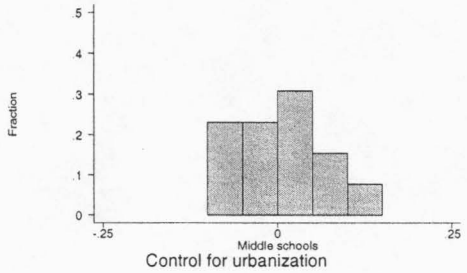
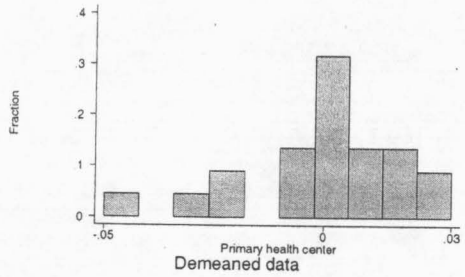


Control for urbanization

Andhra Pradesh

Proportion of villages with middle school



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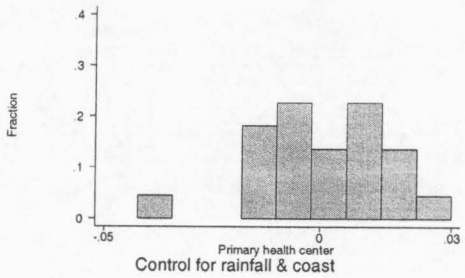
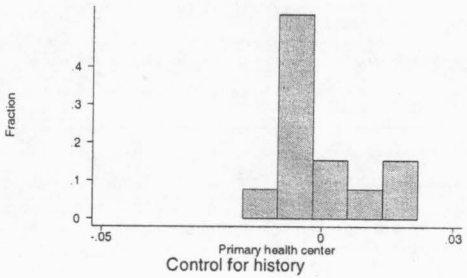


Control for rainfall & coast



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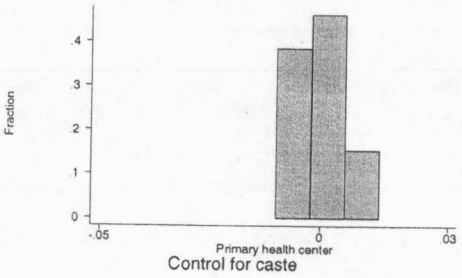

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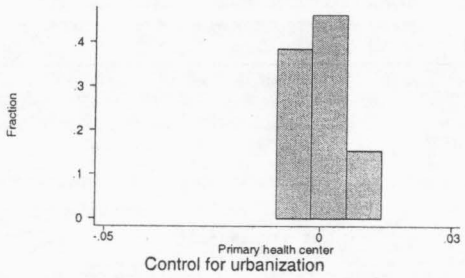
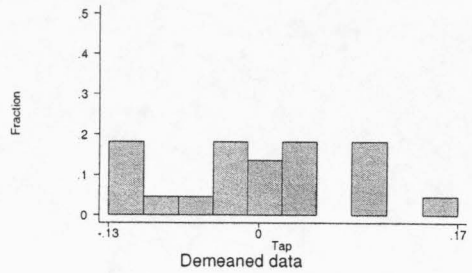
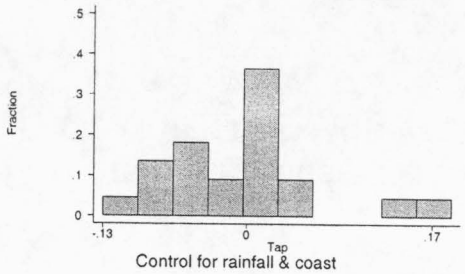


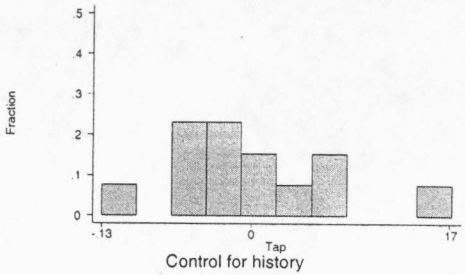
Control for urbanization

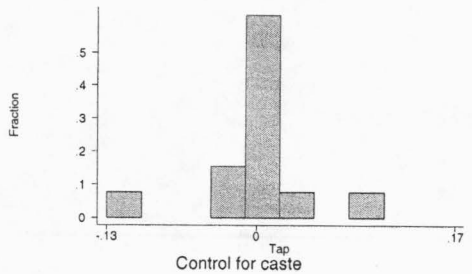
Andhra Pradesh

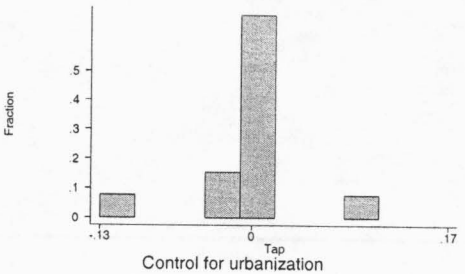
Proportion of villages with primary health center





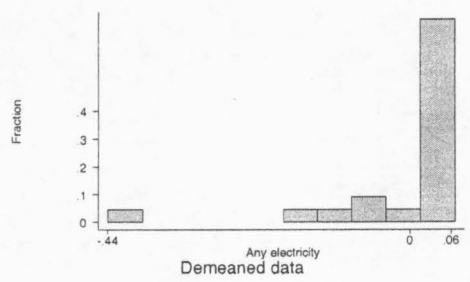






Andhra Pradesh

Proportion of villages with tap



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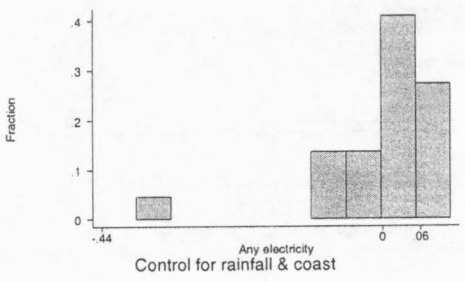

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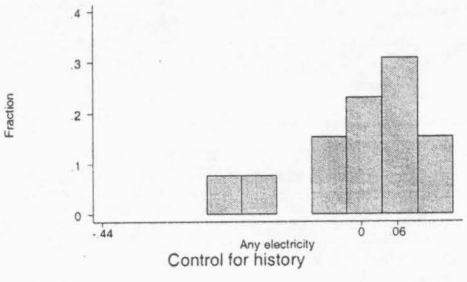

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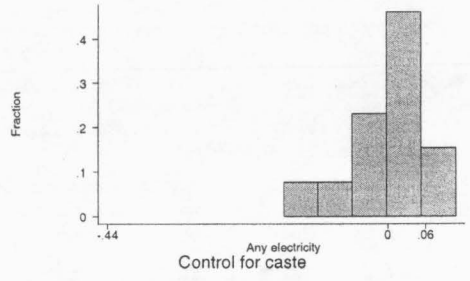

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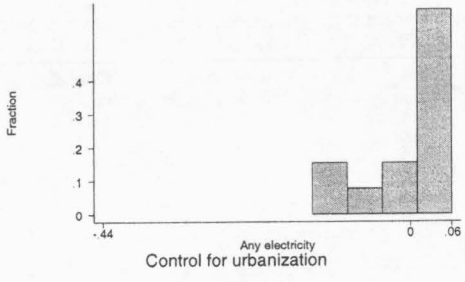
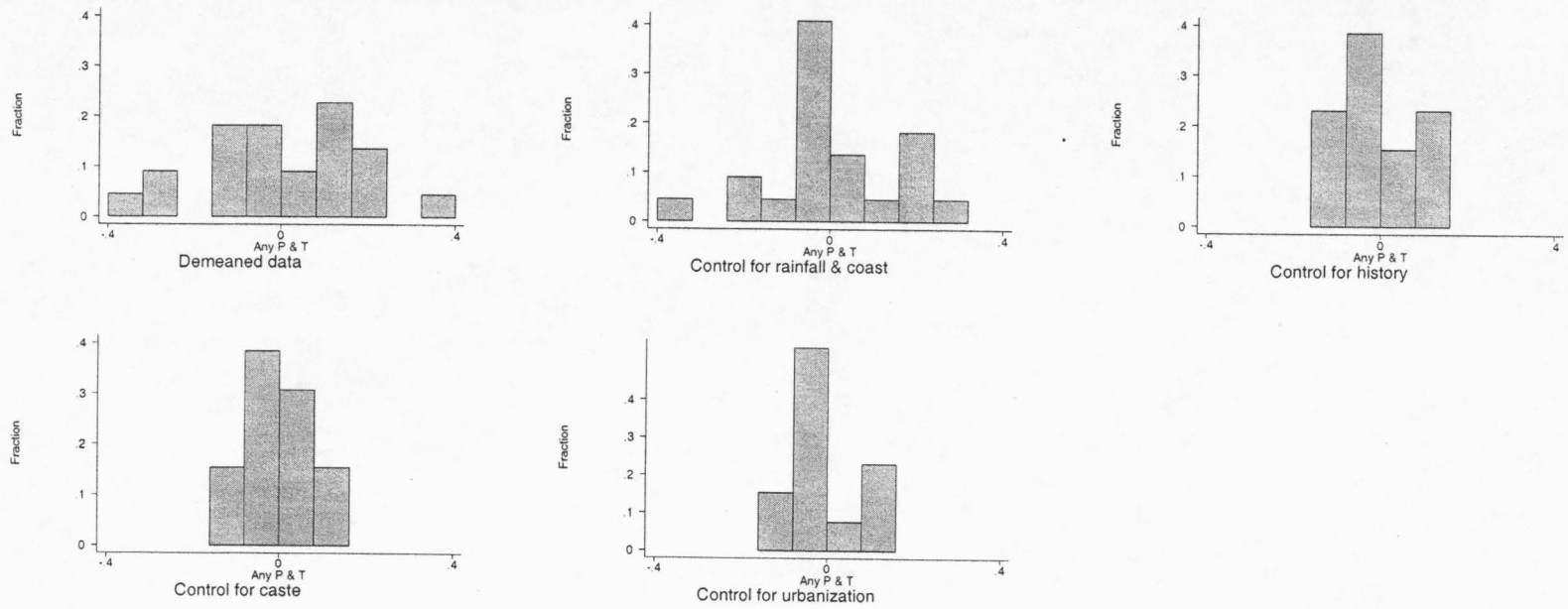


Control for urbanization

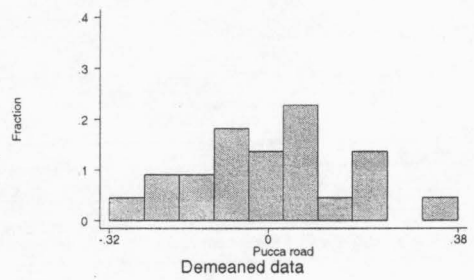
Andhra Pradesh

Proportion of villages with electricity



Andhra Pradesh

Proportion of villages with any P&T



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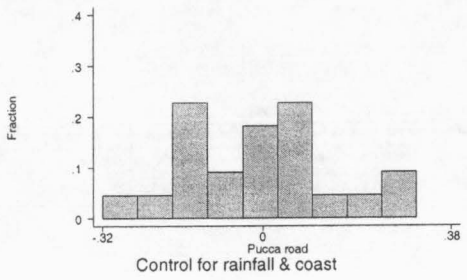
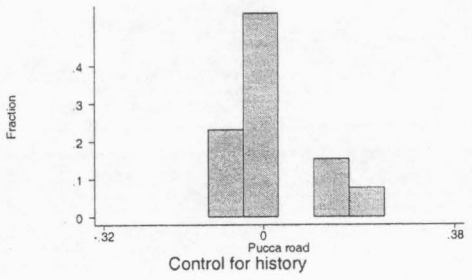


Control for rainfall & coast



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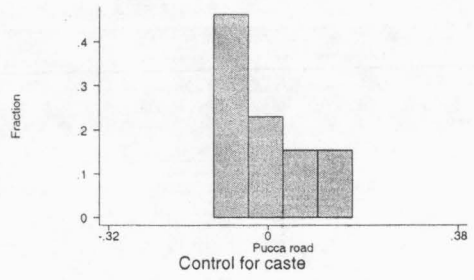
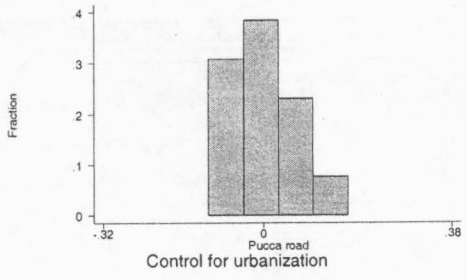


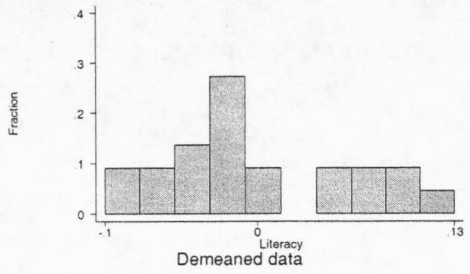
Control for caste



Control for urbanization

Andhra Pradesh

Proportion of villages with pucca road



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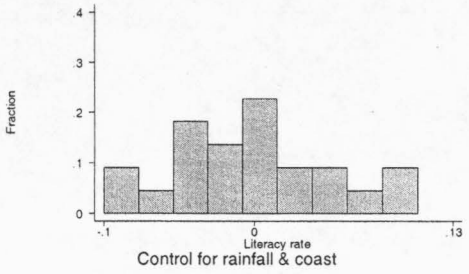
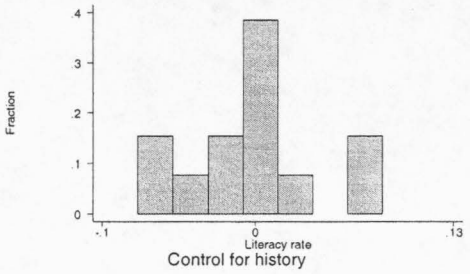


Control for rainfall & coast



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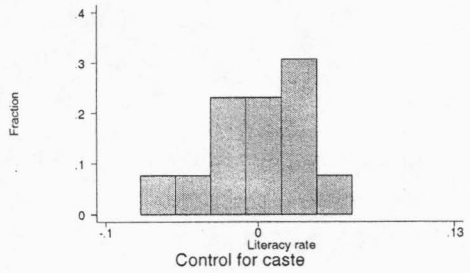

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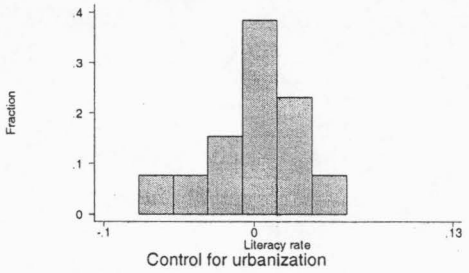

Control for urbanization

Andhra Pradesh

Literacy rate

Table 1a: Education

	(1) Primary school	(2) Middle school	(3) High school	(4) Junior college	(5) Adult lit center
rainfall	-0.000	0.000	0.000	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	0.041	0.020	0.005	-0.002	0.083**
	(0.025)	(0.028)	(0.022)	(0.005)	(0.034)
Non-British	0.041**	0.038**	0.013	0.002	0.077***
	(0.019)	(0.015)	(0.010)	(0.003)	(0.020)
Proportion non-landlord	0.036	0.031*	0.018	0.002	0.042**
	(0.026)	(0.018)	(0.014)	(0.005)	(0.021)
fractionalization-castes and religious groups	-0.242**	-0.262**	-0.217**	-0.011	-0.069
	(0.107)	(0.127)	(0.096)	(0.035)	(0.109)
proportion of scheduled tribes/rural pop	-0.026	-0.245***	-0.138**	0.005	0.045
	(0.052)	(0.057)	(0.060)	(0.016)	(0.054)
proportion of scheduled castes/total pop	-0.082	-0.353***	-0.174**	-0.015	-0.051
	(0.106)	(0.101)	(0.083)	(0.025)	(0.125)
brahman	-0.645***	-0.255	-0.311*	0.043	-0.206
	(0.238)	(0.161)	(0.170)	(0.049)	(0.235)
gini coeff including agricultural laborers	0.249**	0.001	0.124**	-0.005	0.015
	(0.102)	(0.075)	(0.056)	(0.017)	(0.087)
avpop	0.000**	0.000*	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.965***	0.722***	0.325***	0.080**	0.071
	(0.143)	(0.171)	(0.118)	(0.041)	(0.130)
Observations	284	265	240	284	284
R-squared	0.52	0.66	0.64	0.60	0.29

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%;
*** significant at 1%

Table 1b: Health I

	(1) Any medical facility	(2) Primary health subcenter	(3) Primary health center	(4) Health center	(5) Hospital
rainfall	-0.000**	-0.000*	-0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	0.048	0.054**	-0.001	-0.002	-0.006
	(0.057)	(0.022)	(0.004)	(0.003)	(0.004)
Non-British	-0.066*	0.002	0.009**	-0.002	0.004
	(0.036)	(0.010)	(0.004)	(0.002)	(0.003)
Proportion non-landlord	0.170***	0.050***	0.015**	-0.006	-0.006*
	(0.052)	(0.016)	(0.007)	(0.005)	(0.004)
fractionalization-castes and religious groups	-0.235	-0.127	0.023	0.003	-0.059**
	(0.257)	(0.094)	(0.056)	(0.018)	(0.028)
proportion of scheduled tribes/rural pop	-0.229*	-0.050	-0.008	-0.008	-0.021
	(0.124)	(0.039)	(0.020)	(0.007)	(0.015)
proportion of scheduled castes/rural pop	-0.063	-0.151*	0.026	0.011	0.015
	(0.237)	(0.087)	(0.040)	(0.013)	(0.030)
brahman	-0.567	-0.406***	-0.143**	-0.056	-0.047
	(0.477)	(0.143)	(0.068)	(0.035)	(0.050)
gini coeff including agricultural laborers	-0.611***	-0.028	-0.041*	-0.026	-0.016
	(0.199)	(0.061)	(0.024)	(0.018)	(0.013)
avpop	0.000***	0.000**	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.011	0.031	0.165***	0.008	0.076*
	(0.346)	(0.111)	(0.056)	(0.017)	(0.039)
Observations	284	266	284	284	284
R-squared	0.47	0.40	0.59	0.44	0.65

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1c: Health II

	(1) Mother and child welfare center	(2) Child welfare center	(3) Family planning center	(4) TB clinics	(5) Child health worker
rainfall	-0.000**	0.000	-0.000	0.000*	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	-0.011	-0.007	0.025*	0.002	0.043
	(0.009)	(0.011)	(0.014)	(0.002)	(0.061)
Non-British	-0.012***	-0.001	0.012**	0.001	-0.080**
	(0.004)	(0.005)	(0.005)	(0.001)	(0.036)
Proportion non-landlord	0.002	0.020***	0.018**	0.001	0.121**
	(0.007)	(0.007)	(0.008)	(0.001)	(0.048)
fractionalization-castes and religious groups	0.021	-0.023	-0.082*	-0.005	-0.232
	(0.040)	(0.052)	(0.042)	(0.007)	(0.232)
proportion of scheduled tribes/rural pop	-0.009	0.023	-0.050**	0.005	-0.067
	(0.020)	(0.033)	(0.024)	(0.005)	(0.117)
proportion of scheduled castes/rural pop	0.042	-0.007	-0.188***	0.010	-0.111
	(0.035)	(0.040)	(0.054)	(0.009)	(0.239)
brahman	0.136	0.063	-0.169**	-0.017*	-0.230
	(0.085)	(0.075)	(0.079)	(0.009)	(0.454)
gini coeff including agricultural laborers	-0.096***	-0.043	0.028	-0.002	-0.634***
	(0.029)	(0.041)	(0.029)	(0.003)	(0.198)
avpop	0.000*	0.000***	0.000	0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.052	-0.034	0.100**	-0.003	-0.040
	(0.059)	(0.041)	(0.047)	(0.006)	(0.305)
Observations	284	284	284	284	284
R-squared	0.55	0.20	0.39	0.22	0.45

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1d: Water

	(1) Any water facility	(2) Well	(3) Handpump	(4) Tube well	(5) Tap	(6) Tank
rainfall	-0.000	0.000***	-0.000***	0.000***	-0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	-0.002	-0.100	-0.226***	0.010	0.082*	0.094*
	(0.002)	(0.071)	(0.077)	(0.069)	(0.043)	(0.050)
Non-British	-0.001	-0.032	-0.135***	-0.054	0.088***	0.013
	(0.001)	(0.033)	(0.045)	(0.037)	(0.023)	(0.027)
Proportion non-landlord	0.001	-0.084*	-0.132**	-0.059	0.163***	-0.025
	(0.002)	(0.048)	(0.059)	(0.049)	(0.035)	(0.033)
fractionalization-castes and religious groups	0.019	0.630**	1.000**	-0.262	-0.820***	0.187
	(0.018)	(0.254)	(0.412)	(0.231)	(0.250)	(0.163)
proportion of scheduled tribes/rural pop	-0.003	-0.342***	-0.035	-0.016	-0.249***	-0.154**
	(0.004)	(0.105)	(0.150)	(0.103)	(0.086)	(0.069)
proportion of scheduled castes/rural pop	-0.015**	-0.926***	-0.350	0.401	-0.306*	-0.644***
	(0.007)	(0.265)	(0.286)	(0.277)	(0.180)	(0.178)
brahman	0.004	-0.497	0.268	-0.087	0.476	-0.570
	(0.015)	(0.451)	(0.502)	(0.432)	(0.385)	(0.349)
gini coeff including agricultural laborers	0.007	-0.096	-0.117	0.347*	0.058	-0.237**
	(0.006)	(0.209)	(0.250)	(0.189)	(0.135)	(0.116)
avpop	0.000	-0.000	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.970***	-0.111	-0.352	-0.057	1.158***	0.300*
	(0.018)	(0.338)	(0.488)	(0.321)	(0.319)	(0.164)
Observations	284	284	284	284	284	284
R-squared	0.14	0.42	0.43	0.38	0.48	0.39

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1e: Electricity

	(1) Any electricity	(2) Electrified	(3) Electricity for domestic use	(4) Electricity for agriculture
rainfall	-0.000***	-0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	0.057	0.018	0.095***	-0.011
	(0.035)	(0.027)	(0.036)	(0.046)
Non-British	0.061**	0.016	0.110***	0.124***
	(0.028)	(0.026)	(0.028)	(0.034)
Proportion non-landlord	0.059*	-0.008	0.077**	0.065
	(0.031)	(0.029)	(0.033)	(0.040)
fractionalization-castes and religious groups	-0.506***	-0.189	-0.504***	-0.239
	(0.160)	(0.144)	(0.173)	(0.198)
proportion of scheduled tribes/rural pop	-0.197**	0.016	-0.141*	-0.394***
	(0.077)	(0.064)	(0.080)	(0.085)
proportion of scheduled castes/rural pop	-0.284*	0.057	-0.322**	-0.164
	(0.166)	(0.145)	(0.156)	(0.197)
brahman	0.369	0.041	0.673*	-0.167
	(0.323)	(0.281)	(0.376)	(0.387)
gini coeff including agricultural laborers	0.420***	0.355***	0.621***	0.564***
	(0.135)	(0.129)	(0.149)	(0.178)
avpop	0.000***	0.000**	0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.853***	0.752***	1.023***	0.275
	(0.192)	(0.157)	(0.214)	(0.273)
Observations	284	259	284	284
R-squared	0.62	0.42	0.66	0.67

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1f: Post and Telegraph

	(1) Any P&T	(2) Post office	(3) Telegraph	(4) Phone
rainfall	-0.000**	-0.000**	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	0.142***	0.145***	0.003	0.039
	(0.037)	(0.037)	(0.008)	(0.027)
Non-British	0.121***	0.114***	0.015***	0.073***
	(0.029)	(0.029)	(0.005)	(0.013)
Proportion non-landlord	0.080***	0.076***	0.013**	0.066***
	(0.029)	(0.029)	(0.007)	(0.017)
fractionalization-castes and religious groups	-0.202	-0.168	0.024	0.081
	(0.254)	(0.257)	(0.053)	(0.127)
proportion of scheduled tribes/rural pop	-0.053	0.011	-0.046**	-0.128**
	(0.127)	(0.121)	(0.020)	(0.053)
proportion of scheduled castes/rural pop	-0.040	0.076	-0.023	-0.239**
	(0.163)	(0.155)	(0.045)	(0.118)
brahman	-0.158	-0.047	0.021	-0.440***
	(0.301)	(0.285)	(0.053)	(0.141)
gini coeff including agricultural laborers	0.024	0.006	-0.007	0.061
	(0.115)	(0.116)	(0.027)	(0.071)
avpop	0.000*	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.638**	0.526*	0.081	0.253
	(0.293)	(0.282)	(0.071)	(0.159)
Observations	284	284	284	284
R-squared	0.50	0.42	0.64	0.52

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1g: Roads, Rail etc.

	(1) Transport	(2) Bus	(3) Rail	(4) Pucca road
rainfall	-0.000**	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
coastdummy	0.131***	0.130***	0.001	0.076**
	(0.035)	(0.035)	(0.005)	(0.032)
Non-British	0.154***	0.161***	-0.001	0.033*
	(0.023)	(0.023)	(0.002)	(0.018)
Proportion non-landlord	0.194***	0.201***	0.000	0.154***
	(0.027)	(0.027)	(0.003)	(0.025)
fractionalization-castes and religious groups	-0.437***	-0.445***	-0.049***	0.004
	(0.154)	(0.155)	(0.017)	(0.163)
proportion of scheduled tribes/rural pop	-0.267***	-0.260***	-0.019**	-0.138*
	(0.083)	(0.083)	(0.009)	(0.072)
proportion of scheduled castes/rural pop	-0.486***	-0.475***	-0.012	-0.100
	(0.148)	(0.150)	(0.021)	(0.134)
brahman	-0.410	-0.397	-0.069**	0.486*
	(0.271)	(0.272)	(0.028)	(0.257)
gini coeff including agricultural laborers	0.204*	0.201*	0.021**	0.102
	(0.114)	(0.114)	(0.010)	(0.093)
avpop	0.000	0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.149***	1.156***	0.054**	0.264
	(0.231)	(0.231)	(0.024)	(0.223)
Observations	284	284	284	284
R-squared	0.75	0.75	0.57	0.74

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1h: Literacy

	(1) rural male literacy rate	(2) rural female literacy rate	(3) rural literacy rate
rainfall	0.000**	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
coastdummy	0.015	-0.003	-0.005
	(0.020)	(0.023)	(0.020)
Non-British	-0.027**	-0.053***	-0.042***
	(0.013)	(0.012)	(0.011)
Proportion non-landlord	0.031**	-0.006	0.009
	(0.015)	(0.016)	(0.014)
fractionalization-castes and religious groups	-0.055	-0.009	-0.051
	(0.062)	(0.068)	(0.062)
proportion of scheduled tribes/rural pop	-0.214***	-0.142***	-0.187***
	(0.037)	(0.034)	(0.032)
proportion of scheduled castes/rural pop	-0.052	-0.110	-0.095
	(0.073)	(0.079)	(0.074)
brahman	0.500***	0.381***	0.426***
	(0.137)	(0.127)	(0.126)
avpop	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Constant	0.563***	0.327***	0.422***
	(0.095)	(0.100)	(0.092)
Observations	304	284	284
R-squared	0.69	0.81	0.78

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%