Lectures in Growth and Development (M. Ghatak, LSE, 2008-09)

Topic 10: Organization Design for Public Goods Provision

Introduction

- Organization design issues for provision of public goods & services

- Effective provision of public goods

  - key determinant of quality of life (not measured in per capita income)

  - important plank of poverty reduction strategy (the rich can find private alternatives, lobby for better services, or "exit")

- Market underprovides these goods as prices do not fully reflect marginal social benefit

- Traditional view equated public goods to government provision & ignored
  - government failure
  - non-state non-market institutions such as voluntary & community organizations

- World Development Report 2004
  - Governments spend on average 1/3 of their budget to health & education but little reaches the poor
  - Even when it is targeted to the poor, there is leakage (hard to measure extent - see Olken, 2005)
  - There is rampant absenteeism & poor quality service (e.g., 74% doctors absent in primary health care facility in B'Desh, 25% teachers in India, 40% health providers in India)

- Tables from Kremer et al "Missing in Action: Teacher and Health Worker Absence in Developing Countries" (JEP, Winter 2006)

- Based on random inspection by survey team (as opposed to attendance records at the facility)

- Absenteeism declining with income but high at all levels

- Not efficient: teacher and student absence not highly correlated

- Correlates: Male (+), Union member (+), Head teacher (+), Born in school district (-), School infrastructure (-), Literacy of parents (-) (Table 3)

- Limited evidence that less absenteeism in private schools (table 4)

- They are likely to be placed in villages where public shools are particularly bad

- Despite 25% absence rate of teachers for India, no teacher fired and only less than 1% head-teachers transferred.

- The real puzzle is why people show up at all!

- Need to understand key organization design issues
  - Role of ownership: why not privatize, contract out, use NGOs?
  - Role of incentive pay: should teachers & doctors be given bonuses for good performance or attendance?
  - Audits vs, increasing grassroots participation
- Earlier view ignored these issues assuming there are no agency problems within the public sector
- However, does not mean we should mechanically apply the standard organization design of private goods provision (e.g., give high-powered incentives to all government employees)

Ownership of Public Goods

- Government provision vs. privatization or contracting out (Hart, Shleifer & Vishny, QJE 1997 and Besley & Ghatak, QJE 2001)

- Basic question: granted that government should subsidize provision of certain goods and services, should it provide these in-house or should it contract it out to a for-profit or non-profit firm?

- Boundaries of government

- Clearly without any contracting problems, organization design does not have allocative implications

- Important contracting problem in these environments: incentive to undertake investments that will improve quality and/or reduce costs

- Suppose one specific person or firm has the capacity to provide the service

- Do you hire this person as a government employee or make the firm as part of the ministry of education

- Do you let them provide the service, and pay them a fee

- Suppose there is one investing party, called the manager

- Can either own a facility (a school, hospital) or work for the government

- Investment leads to reduction in cost, but also affects quality of the service

- In particular, if the manager invests an amount e.
  - the cost of the project is $C(e) = C_0 - c_1 e$
  - the quality of the project is $B(e) = B_0 - b_1 e$
  - manager's cost of investing effort $c(e) = \frac{1}{2}e^2$

- That is, cutting costs leads to some sacrifice of quality

- Suppose the government's puts a welfare weight of $\theta_g > 0$ on the benefit from the project

- If e was contractible then the value of e chosen to maximize joint-surplus is given by

$$\max_e \theta_g B(e) - C(e) - e$$

- This yields

$$e^{**} = c_1 - \theta_g b_1.$$

- This is the first-best effort level

- Suppose e is observable *ex post*, but non-contractible *ex ante*

- However, C_0 and B_0 are contractible, and the parties can negotiate an initial price of P_0

- Since you cannot write contracts on e, parties will renegotiate after e is sunk & observed

- Assume parties follow the Nash bargaining solution

- Divide the surplus equally, but make an adjustment for the relative bargaining powers of the parties

- In particular, G and M will get

$$\frac{\theta_g B(e) - C(e)}{2} + \frac{\overline{u}_g - \overline{u}_m}{2}$$
$$\frac{\theta_g B(e) - C(e)}{2} + \frac{\overline{u}_m - \overline{u}_g}{2}.$$

- What organizational form is chosen matters for what these disagreement payoffs are

- If the government is the owner, it can fire the manager if they have a bargaining dispute, but then only a fraction λ of the results of the manager's investment stays on the project.

- Hence the disagreement payoffs of the government and the manager are

$$\begin{aligned} \overline{u}_g^g &= \lambda \{\theta_g B(e) - C(e)\} \\ \overline{u}_m^g &= 0. \end{aligned}$$

- In this case, the manager anticipates this *ex ante* and chooses e to:

$$\max_e \frac{\theta_g B(e) - C(e)}{2} - \frac{\lambda \{\theta_g B(e) - C(e)\}}{2} - \frac{1}{2}e^2$$

- This yields

$$e_G^* = \frac{1-\lambda}{2}(c_1 - \theta_g b_1).$$

- e is lower than the first-best (why? because it is as if there is a "tax" of $\frac{1-\lambda}{2}$ on the objective function)

- If the manager is the owner, then the disagreement payoffs are

$$\begin{aligned} \overline{u}_g^m &= \theta_g B(e) \\ \overline{u}_m^m &= -C(e) \end{aligned}$$

- In this case, the manager chooses e *ex ante* to:

$$\max_e \frac{\theta_g B(e) - C(e)}{2} + \frac{-C(e) - \theta_g B(e)}{2} - \frac{1}{2}e^2$$

- This yields

$$e_M^* = c_1$$

- Clearly

$$e_G^* < e^{**} < e_M^*.$$

- Naturally, e is higher than the first-best (why? no weight on $b(e)$ which is a cost term)

- Therefore, we have demonstrated that under private ownership e is too high & under public ownership e is too low.

Extensions

- What if there is no cost-quality trade off?
  - Set $b(e) = 0$.
  - Then we can immediately see that privatization achieves the first-best
  - Give property rights to the person who undertakes the investment
  - Bargaining power to other parties just diminishes investment incentives
- In general, the more important is cost reduction, & the less important is loss of quality this holds (garbage collection)
- On the other hand, the more important is loss of quality & the less important is cost reduction, government ownership is better (army, legal system)

- What if government does not care?
  - Set $\theta_g = 0$
  - Privatization achieves the first-best

- What if the private provider cares about quality
  - Now manager's non-pecuniary payoff is $\theta_m B(e)$
  - First best

$$\max_e (\theta_g + \theta_m) B(e) - C(e) - \frac{1}{2} e^2$$

  - This yields

$$\hat{e}^{**} = c_1 - (\theta_g + \theta_m) b_1.$$

  - Under government ownership disagreement payoffs are

$$\begin{aligned} \overline{u}_g^g &= \lambda \{\theta_g B(e) - C(e)\} \\ \overline{u}_m^g &= \lambda \theta_m B(e). \end{aligned}$$

– First order condition for effort choice is given by

$$\max_e \frac{(\theta_g + \theta_m)B(e) - C(e)}{2} + \frac{\lambda\theta_m B(e) - \lambda\{\theta_g B(e) - C(e)\}}{2}.$$

– This yields

$$\hat{e}^*_G = \frac{1-\lambda}{2}c_1 - \left[\frac{1-\lambda}{2}\theta_g + \frac{1+\lambda}{2}\theta_m\right] b_1.$$

– Under private ownership disagreement payoffs are

$$\begin{aligned} \overline{u}^m_g &= \theta_g B(e) \\ \overline{u}^m_m &= \theta_m B(e) - C(e). \end{aligned}$$

– First order condition for effort choice is given by

$$\max_e \frac{(\theta_g + \theta_m)B(e) - C(e)}{2} + \frac{\theta_m B(e) - C(e) - \theta_g B(e)}{2}.$$

– This yields

$$\hat{e}^*_M = c_1 - \theta_m b_1$$

– Clearly,

$$\hat{e}^*_G < \hat{e}^{**} < \hat{e}^*_M < e^*_M$$

– The privatization/contracting out option leads to lower level of e than before (but still greater than first-best)

– Government provision leads to lower level of e than before as well (and further lower than first-best)

– Contracting out to non-profits dominates contracting out to for-profits or privatization

- More interestingly, if $\theta_m > \theta_g$ then non-profit ownership dominates government ownership
  - same weight on cost term as in first-best
  - higher weight on benefit term compared to government $\frac{1-\lambda}{2}\theta_g + \frac{1+\lambda}{2}\theta_m < \theta_m$ as $\frac{1-\lambda}{2} + \frac{1+\lambda}{2} = 1$.

- What could be potential problem with non-profits: they may not be as efficient in cutting costs

- Indeed, NGOs are mostly praised for their commitment to the cause even though in terms of efficiency it might be dominated by a for-profit firm or even the government with more resources in its disposal

- For social service delivery (health, education) NGOs are preferred

- Here non-contractible quality matters, and so the commitment of NGOs is important

- For management of infrastructure for-profit contractors are preferred as cost efficiency is more important (road maintenance, water supply)

Evidence

I. Privatization of water services in Argentina (Galiani, Gertler, & Schargrodsky, JPE 2005)

- Safe water important for health outcomes - focus on child mortality due to waterborne diseases
- Diarrhea accounts for 15% of child deaths worldwide
- In Argentina in the 1990s 30% municipalities covering 60% of the population privatized water services
- Private for-profit control
- GGS find that child mortality fell by 8% in areas that privatized & the largest effect was in poorer areas

- See Figure 1: municipalities that privatized experienced a sharp decline in child mortality

- About 8% drop in child mortality - most of it in low income areas

- Before 1995 few municipalities privatized, bulk of it happened after 1995 (Figure 2): same period in which child mortality fell sharply

- How do we reconcile this to the theory?

- Cost savings more important, whereas quality is relatively monitorable (also, water pressure, repair delays, shortages)

- Variation driven by the decision of some municipalities to privatize

- Some remained public owned, some remained under private for-profit or non-profit operation etc, 28% switched from public to private for-profit

- Usual problem: decision to privatize is a choice that could be driven by shocks that also influence child mortality

- For example, positive economic or political shock causes decision to privatize but also reduces child mortality

- Firstly, pre-reform trends in mortality are similar from Fig 1

- Also, run decision to privatize on municipality characteristics

- Find that economic shocks did not play a big role, nor did child mortality level or trend, but if the local government was run by the same party which was at the federal level & was pushing privatization, more likely to privatize, and in poorer areas

- In their regression on child mortality they do a difference in difference with the usual year and municipality fixed effects

- Also control for a bunch of observables (economic, public spending, political variables)

- A different concern: timing of privatization correlated with other changes in policy or economic conditions that affected mortality in general

- Do the analysis for separate types of illness and find that affected child mortality from only water-related diseases

II. Contracting For Health: Evidence from Cambodia, Bloom et al

- Starting in 1999, Cambodia tried an alternative approach in which the government tendered management of government health services for contract in certain districts to private bidders, and increased public health expenditure to pay for these bids.

- Contractors were required to provide all preventive, promotional, and simple curative health care services mandated for a district by the Ministry of Health, known as the Minimum Package of Activities (MPA).

- They were responsible for services at district hospitals, subdistrict health centers, and more remote health posts.

- Performance was measured against eight service delivery indicators.

- Inadequate performance could lead to sanctions and would reduce the likelihood that the contract would be renewed.

- The government randomly selected 8 districts from a set of 12 in which to introduce the program.

- However, bids that met technical and cost requirements were received in only five of the eight districts, and hence the program was only implemented in these districts.

- Despite the limited power associated with the small sample, estimated effects are large enough that many are statistically significant.

- The contracting program caused large increases in the service outcomes targeted by it, on average about one baseline standard deviation.
  - the receipt of vitamin A by children under 5 was increased by 42 percentage points
  - receipt of antenatal care by pregnant women was increased by 36 percentage points.
- The project improved the management of government health centers, particularly in the availability of 24-hour service, the actual presence of staff scheduled to be there, supervisory

visits, and the presence of supplies and equipment.

- The program did not have large effects on health services indicators not explicitly mentioned in the contract.

- There is some limited evidence the program improved self-reported health.

- There were two variants of the approach, contracting-in and contracting-out.

- They differed in the degree of control to be given the contractors.

- Contracting-in districts were expected to work within the existing government system for procurement of drugs, equipment,

and supplies.

- Their operating expenses were financed through the government budget in the same manner as ordinary districts.

- Contracting-out district management had pretty much full authority for and responsibility over their districts.

- They were allowed to hire and fire staff, could bring in health workers from other parts of the country, and were responsible for their own procurement of drugs, supplies, and equipment.

- Existing Ministry of Health staff in the contracting-out districts could join the contractor's organization and take leaves of absence from the civil service.

- If the contractor decided to fire these staff, they would be transferred to a government post in a different district.

- In the end, only a few staff members in contracting out districts were fired.

- The project designers' initial intention was that salaries in the contracting-in districts would be based on the civil service pay structure, plus additional amounts decided by the contractors that would be raised from user fees.

- Contracting-out contractors, in contrast, could implement the pay structure of their choosing.

- In treated districts, the management of government health care services was put out to competitive bid for qualified organizations, such as NGOs and private firms.

- For each district the organization with the highest combined score on technical quality of their proposal and price was awarded a contract to manage the district's government health care service.

- In the end, only international NGOs, firms, and universities submitted bids.

- All the winners were international NGOs, which is not surprising as there were almost no local NGOs working in the health sector

Incentive Pay for Teachers and Health Workers

Theory

Measurement Problems

- Outcome measure is noisy: signal $\sigma \in \{0, 1\}$

- Let p denote the probability that the signal is $\sigma = 1$ when the project is successful and let q denote the probability that the signal is $\sigma = 1$ when the project is a failure.

- We assume that the signal is (weakly) informative in the sense that $p \geq q$.

- If $p = 1$ and $q = 0$, then output is perfectly observed.

- The first-best effort level is:

$$e^* = \arg\max_e \left\{ e\pi - \frac{c}{2}e^2 \right\} = \frac{\pi}{c}.$$

- We assume $\frac{\pi}{c} < 1$ to focus on interior solutions.

- A contract is a pair $\{b(\sigma)\}_{\sigma \in \{0,1\}}$. It is straightforward to solve for the optimal incentive scheme.

- As before, set $b(0) = 0$

- Let $\Delta = p - q$.

- First, observe that the optimal effort level of the agent is:

$$\begin{aligned} \hat{e} &= \arg\max_e \{ e\Delta b + qb - \frac{c}{2}e^2 \} \\ &= \frac{\Delta b}{c}. \end{aligned}$$

- Plugging this into the principal's payoff function, she chooses the contract to maximize:

$$\frac{\Delta b}{c}(\pi - \Delta b) - qb$$

- Then we have:

$$b = \max\left\{0, \frac{\pi\Delta - qc}{2\Delta^2}\right\}.$$

- The corresponding effort level is

$$e = \max\left\{0, \frac{b\Delta}{c}\right\}.$$

- If the output is sufficiently well-measured, then there is positive incentive pay to elicit effort.

- Specifically, this will be the case if

$$\frac{\pi}{c} \geq \frac{q}{\Delta}.$$

- This is more likely to be satisfied the higher is $\gamma(1)$ and the lower is $\gamma(0)$. In particular, it will always hold when $\gamma\,(0)$ is close enough to zero.

- If this condition does not hold, it is not worthwhile for the principal to use any incentive pay at all.

Motivated Agents

- Agents intrinsically care about project outcome (dedicated teachers, doctors)

- Suppose agent's derive non-pecuniary benefits from project success, say θ

- Now **First-best** (effort contractible) solves

$$\max_{e} (\pi + \theta)\, e - \frac{1}{2} e^2.$$

  - effort: $\pi + \theta$

  - expected joint surplus: $\frac{1}{2}(\pi + \theta)^2$.

- **Second best.** Solve:

$$\max_{\{b,w\}} u^p = (\pi - b)\, e - w$$

subject to:

(i) *limited liability constraint* (LLC):

$$b + w \geq \underline{w}, w \geq \underline{w}.$$

(ii) *participation constraint* (PC):

$$u^a = e\,(b + \theta) + w - \frac{1}{2}e^2 \geq \overline{u}.$$

(iii) *incentive-compatibility constraint* (ICC):

$$e = b + \theta$$

- **Effort** less than first-best level $\pi + \theta$ otherwise principal earns negative expected payoff

- Higher than when agent was not motivated

- As before, set $w = \underline{w}$ and choose b to maximize $(\pi - b)(b + \theta) - \underline{w}$

- Bonus is $b^* = \max\left\{\frac{\pi-\theta}{2}, 0\right\}$
  - Case 1a: Agent is more motivated than principal ($\theta \geq \pi$): $b^* = 0$ (no incentive pay)
  - Case 1b: Principal is more motivated than agent ($\pi > \theta$): $b^* = \frac{1}{2}(\pi - \theta)$ (incentive pay decreasing in agent motivation)
- Corresponding effort level: $e^* = \max\left\{\frac{\pi+\theta}{2}, \theta\right\}$

Multi-Tasking

- If the agent performs several tasks, and the performance measures of these tasks are not equally good, then it may not be efficient to give explicit incentives

- For example, teachers can invest effort to improve the test scores of their students, but also to impart skills such as curiosity, values that are hard to measure but important nevertheless

- If you reward teachers only on exam performance measures of their students, they will cut down the second type of effort and overall the outcome may be less desirable than when they are paid a flat wage.

- Modify the basic model in the following way:
  - One agent undertakes two actions, e_1 and e_2
  - The cost function of the agent is $\frac{1}{2}e_1^2 + \frac{1}{2}e_2^2 + \gamma e_1 e_2$ ($\gamma > 0$ means actions are substitutes, otherwise complements)
  - Outcome of task 1 is very hard to measure, so set $b = 0$ by previous argument.
  - Offer bonus b for success in task 2 which has a good performance measure
  - Agent cares about success in both tasks to some degree: θ

- Agent solves

$$\max_{e_1,e_2} \theta e_1 + (\theta + b)\, e_2 - (\frac{1}{2}e_1^2 + \frac{1}{2}e_2^2 + \gamma e_1 e_2)$$

- First order conditions

$$\begin{aligned} \theta &= e_1 + \gamma e_2 \\ \theta + b &= e_2 + \gamma e_1 \end{aligned}$$

- Solving simultaneously:

$$\begin{aligned} e_1 &= \frac{1}{1-\gamma^2}\{\theta(1-\gamma) - \gamma b)\} \\ e_2 &= \frac{1}{1-\gamma^2}\{\theta(1-\gamma) + b\} \end{aligned}$$

- Assume $\gamma < 1$

- Implication: if $\gamma > 0$, then a high bonus reduces e_1

- Also, unless agent has some intrinsic motivation ($\theta > 0$), $e_1 = 0$

- Principal solves

$$u^p = \max_b \pi_1 e_1 + (\pi_2 - b)\, e_2.$$

- Use the incentive-compatibility constraints to express this in terms of b

$$\frac{1}{1-\gamma^2} \max_b \pi_1 \{\theta(1-\gamma) - \gamma b\} + (\pi_2 - b) \{\theta(1-\gamma) + b\}$$

- Solving first-order condition w.r.t. b :

$$b^* = \max \left\{ \frac{\pi_2 - \gamma \pi_1 - \theta(1-\gamma)}{2}, 0 \right\}$$

- If principal does not care very much about task 1 (π_1 low) or cares a lot about task 2 (π_2 high) then b^* more likely to be positive

- If agent is highly motivated in task 2 (α high) or not at all motivated in task 2 (β low) then more likely to use bonus

Evidence

- How to improve attendance and effort?

- Monitor more intensively, and to base incentives (both rewards and punishments) on measured performance (school attendance and/or school performance)

- **Possibility 1:** using some impersonal method of recording absence, and then to base rewards or penalties on that data.

- A randomized experiment using impersonal monitoring was implemented by Seva Mandir

- A NGO that runs non-formal single-teacher primary education centers in tribal villages in the rural Udaipur district.

- The program was evaluated by Duflo and Hanna (2005).

- At the baseline of this study in August 2003, the absence rate was 44 percent

- Seva Mandir selected 120 schools to participate in the study.

- In 60 randomly selected schools (the "treatment schools"), the organization

  - gave the teacher a camera

  - instructed him/her to take a picture of himself or herself and the students every day at opening time and at closing time.

- The cameras had a tamper-proof date and time function.

- Teachers received a bonus as a function of the number of "valid" days they actually attended.

- A "valid" day was defined as a day where the opening and closing pictures were separated by at least five hours and a minimum number of children were present in both pictures.

- The absence rate of teachers was cut by half in the treatment schools, dropping from an average of 36 percent in the comparison schools to 18 percent in the treatment schools.

- Also, interestingly, grades improved.

- How does one explain that?
  - Multitasking story focuses on allocation of given effort between tasks
  - Here this scheme affected that given effort level
- Problem: impersonal monitoring makes no allowances for the circumstances of the absence.

- **Possibility 2**: Someone in the institutional hierarchy (like the headmaster of a school), is given the task of keeping an eye on the teacher and penalizing absences.

- The problem with a person doing the monitoring is that he/she may either be too lazy to monitor, or might collude with workers.

- A program implemented by a non-government organization called ICS Africa in Kenya suggests that when headmasters implement incentives, the incentives might lose their power.

- ICS Africa introduced an incentive program for pre-primary school teachers in which the headmaster was entrusted with monitoring the presence of the pre-primary school teacher.

- At the end of the term, a prize (a bicycle) was offered to teachers with a good attendance record.

- If the teacher did not have a good attendance record, the money would remain with the school, and could be used on whatever the headmaster and the school committee preferred

- Kremer and Chen (2001) report on the results of this experiment.

- In all treatment schools, the headmasters marked the preschool teachers present a sufficient number of times for the teacher to receive the prize (and they therefore all received it).

- However, when the research team independently verified absence through unannounced visits in both treatment and comparison schools, they found that the absence rate was actually exactly at the same high level in treatment and in comparison schools.

- Either to avoid the unpleasantness of a personal confrontation, or out of compassion for the preschool teachers, headmasters had apparently cheated to make sure that preschool teachers could

- get the prize.

- **Possibility 3**: Incentives given on the basis of test scores.

- Lavy (2002), evaluates a program in Israel

- Offered teachers monetary incentives based on their students' achievements in three dimensions
  - the average number of credits per student
  - the proportion of students receiving a matriculation certificate (required for college admission)
  - the school dropout rate.

- Awards were given at the school level, so that all teachers in a school shared the same award.

- The program was implemented in 62 nonrandomly selected secondary schools starting in 1995.

- The incentives took the form of awards on a rank order tournament: only the top three schools, ranked by relative improvement, received a prize.

- Lavy's identification strategy is based on the program's selection criteria

- Limited participation to schools that were the only school of their kind in a community (religious girls' and boys' Jewish schools, secular Jewish schools, and Arab schools).

- He compares the results of program schools with control group schools where there are more than one kind of school in the same community.

- Using a fixed effects estimation procedure, Lavy finds that, after 2 years, the program had a positive and significant effect on two of the three student outcomes evaluated

  - average credits were 0.7 units higher

  - the proportion of students sitting for the matriculation exam increased by 2.1 percent.

- The findings from Israel are consistent both with the conjecture that incentive pay affects teacher effort and the claim that incentive pay causes teachers to teach more strictly to the test.

- Glewwe, Ilias and Kremer (2003) study such an attempt in Kenya

- ICS Africa provided prizes to teachers in grades 4 to 8 based on the performance of the school as a whole on the district exams in each year.

- All teachers who taught these grades were eligible for the prize.

- Prizes were awarded in two categories: "Top-scoring schools" and "Most-improved schools."

- Schools could not win in more than one category.

- Improvements were calculated relative to performance in the baseline year.

- In each category, three first, second, third and fourth prizes were awarded.

- Out of the 50 schools participating in the program, 24 received prizes of some type, and teachers in most schools should have felt that they had a chance of winning a prize.

- Prizes ranged in value from 21 to 43 percent of typical teacher monthly salaries.

- The comparison of the 50 treatment and 50 control schools suggested that this program did improve performance in the district exams (by about 0.14 standard deviations)

- But had no effect on teacher attendance.

- Instead, the teachers held more test preparation sessions.

- The test-score effect was strongest for subject tests on geography, history, and Christian religion, arguably the subjects involving the most memorization.

- Also consistent with this hypothesis, the program had no impact on dropout rates, but exam participation rose (presumably because teachers wanted to avoid penalties for no-shows at exams).

- This method of pushing up tests scores did little for long-term learning, as evidenced by the fact that once the program ended, students who had been in the program schools did not outperform those in control schools.

- Need more robust schemes in place that do not depend completely on "impartial" monitors

- The users have the biggest stake in quality of public services

- Main problem: hard to measure, returns realized later

- Efforts to increase information would help

- Reinikka and Svensson (2005) study

- An information campaign in Uganda to reduce local capture of education funds by empowering schools (parents) to monitor local officials' handling of a large school-grant program

- The ministry published monthly transfers of capitation grants to districts in newspapers

- Subsequently notices on actual receipts of funds posted at all schools

- Authors find strong negative relationship between proximity to a newspaper outlet and diversion

- Not present in the 5 years preceding the programme

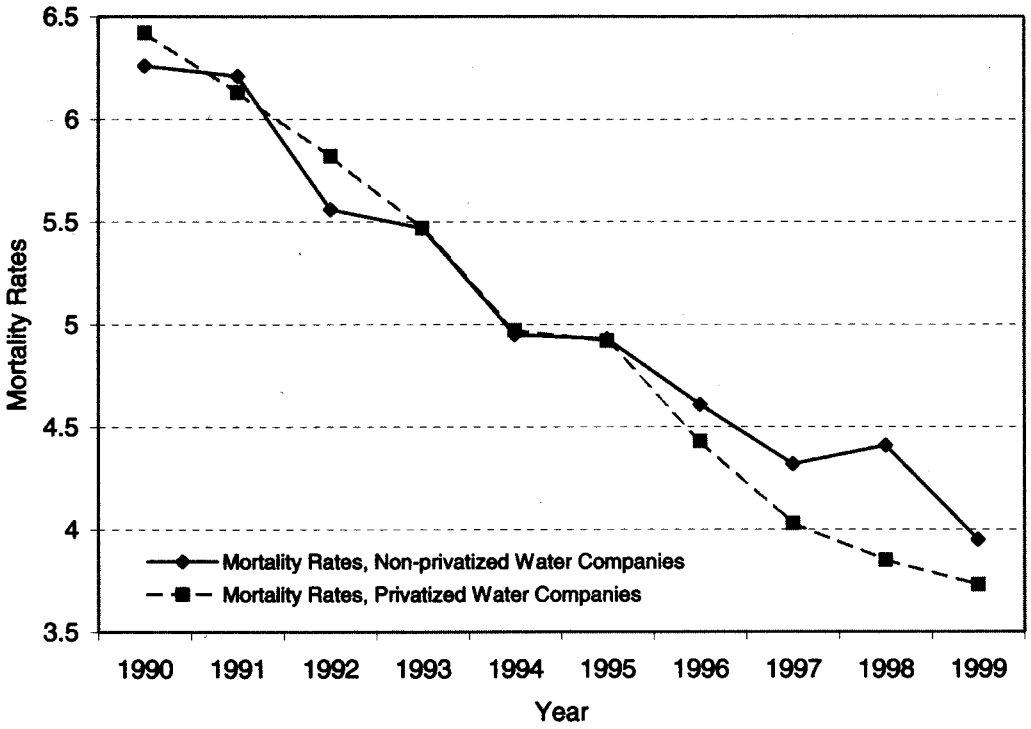


FIG. 1.—Evolution of mortality rates for municipalities with privatized vs. nonprivatized water services

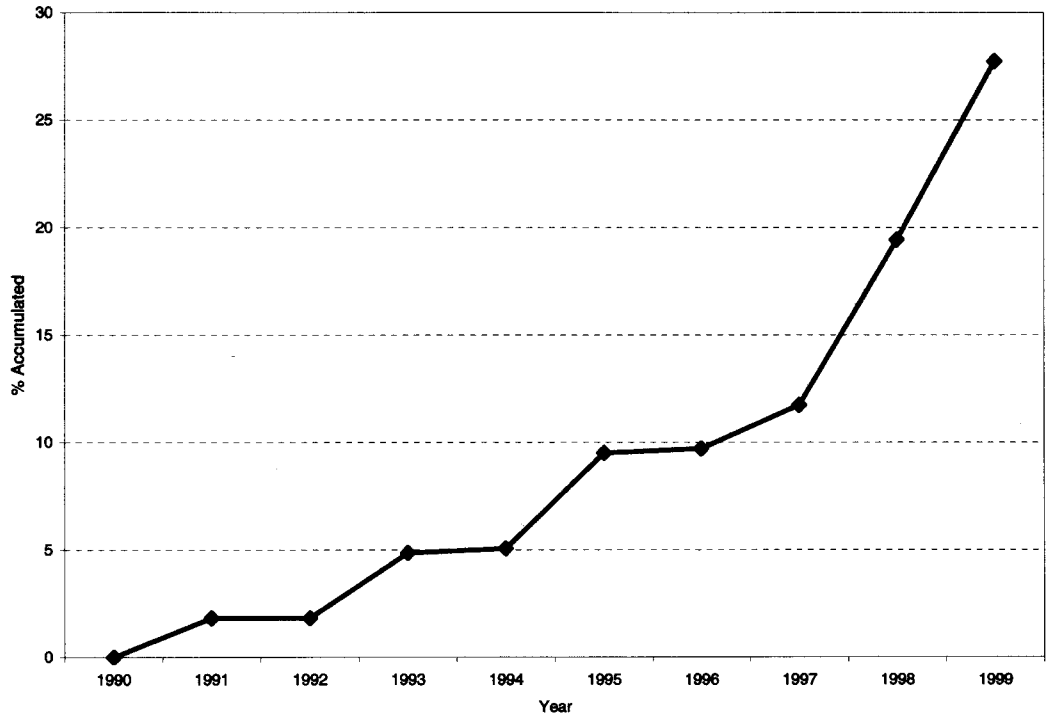
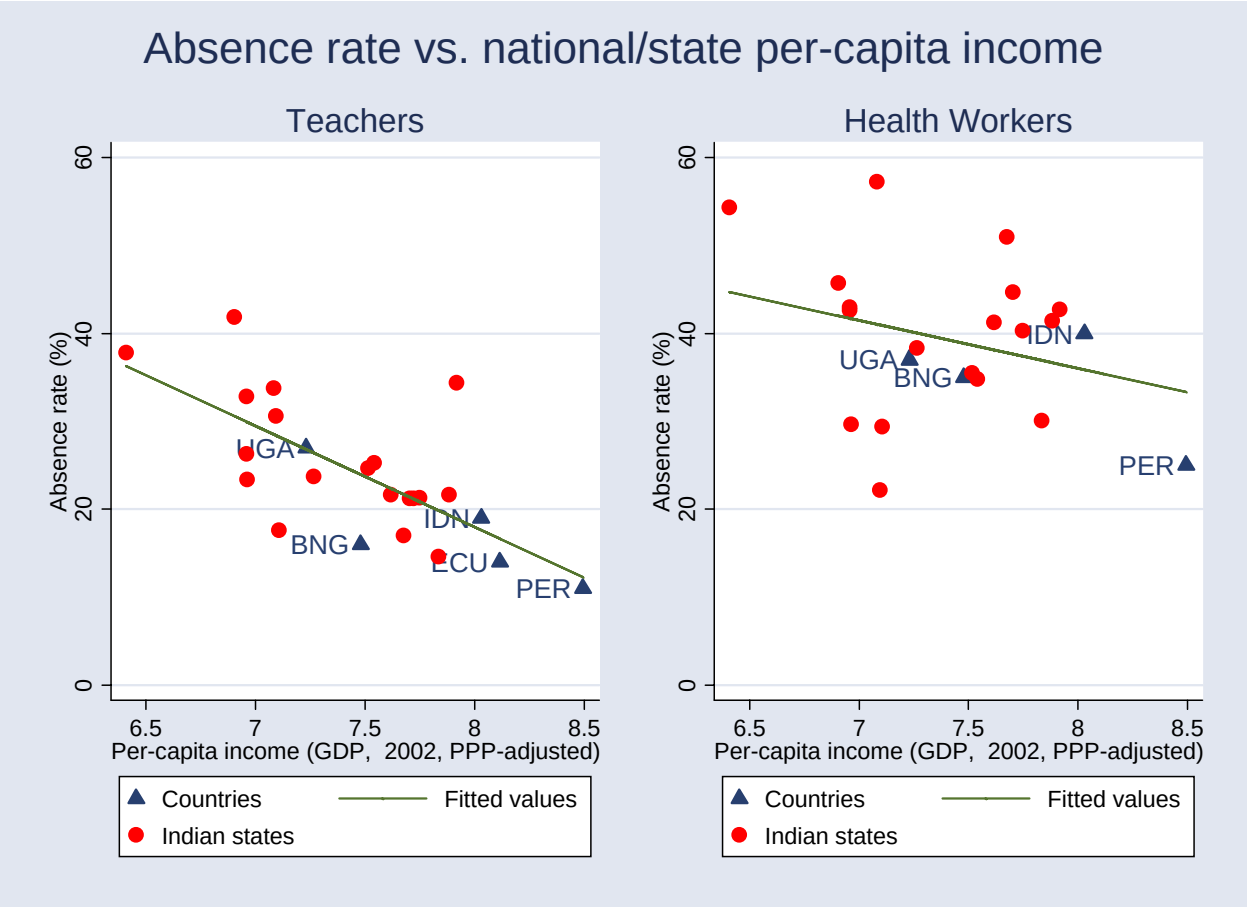


FIG. 2.—Percentage of municipalities with privatized water systems

Figure 1



Source: Authors' calculations

Note: BNG=Bangladesh; ECU=Ecuador; IDN=Indonesia; PER=Peru; UGA=Uganda. India's national averages are excluded, due to the inclusion of the Indian states.

Table 1
Provider Absence Rates by Country and Sector

	Absence rates (%) in:	
	Primary schools	**Primary health centers**
From this project:		
Bangladesh	16	35
Ecuador	14	--
India	25	40
Indonesia	19	40
Peru	11	25
Uganda	27	37
Unweighted average	**19**	**35**

Notes: (1) Providers were counted as absent if they could not be found in the facility for any reason at the time of a random unannounced spot check (see text for further detail).
(2) In Uganda, the sampled districts were divided into sub-counties, and schools in sub-counties with level III health centers comprise the school sampling frame. This sampling strategy may have had the effect of understating slightly the national absence rate there, given that schools in more rural areas appear to have higher absence rates.

Table 3
Correlates of Teacher Absence (HLM, with District-Level Fixed Effects)

(Dependent Variable = Visit Level Absence of a Given Teacher: 0 = Present, 100 = Absent)

	Estimates for the multicountry sample		Countries where coefficient has same sign as multicountry coefficient
	Coefficient	**Standard error**	
Male	1.942**	0.509	BNG, ECU, IND***, IDN, PER
Ever received training	2.141	4.354	BNG, ECU***, PER
Union member	2.538*	1.258	ECU***, IND, IDN, PER
Born in district of school	-2.715**	0.833	BNG, ECU, IND***, IDN*, PER, UG
Received recent training	-0.74	2.070	BNG, ECU***, UGA
Tenure at school (years)	0.033	0.044	BNG, IDN, PER
Age (years)	0.021	0.046	ECU, IND, UGA*
Married	0.742	0.972	BNG, IDN, UGA**
Has university degree	-1.055	1.162	ECU, IDN
Has degree in education	1.806	2.071	ECU**, IND*
Head teacher	3.771***	0.888	BNG, ECU, IND***, IDN**, PER, UGA
School infrastructure index (0-5)	-2.234***	0.438	BNG, ECU*, IND***, IDN, PER
School inspected in last 2 mos.	-0.142	1.194	BNG, ECU, IND***, UGA
School is near Min. Education office	-4.944	2.642	BNG, ECU***, IND**, IDN*
School had recent PTA meeting	2.308	1.576	BNG, ECU, PER*
School's pupil-teacher ratio	-0.095	0.080	BNG, ECU*, IDN, UGA
School's number of teachers	0.015	0.113	ECU, PER, UGA
School has teacher recognition program	0.168	3.525	BNG, IND, IDN***, UGA
Students' parents' literacy rate (0-1)	-9.361***	1.604	BNG, ECU, IND***, IDN, PER**
School is in urban area	2.039	1.441	ECU, IND, PER
School is near paved road	0.040	1.106	BNG, ECU, IDN, UGA
Teacher is contract teacher	5.722	2.906	ECU, IDN**, PER *(no contract teachers in BNG/UGA)*
Dummy for 1st survey round	2.938	1.874	BNG, ECU***, IND***, PER*, UGA
Constant	32.959***	1.963	BNG***, ECU, IND***, IDN**, PER**, UGA
Observations	34880		

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

Regressions also included dummies for the days of the week (not reported here).

Table 4
Absence Rate by School Type (India only)

	Teacher Absence (Unweighted)	Number of Observations	Difference Relative to Government-Run Schools		
			Sample Means	Regression with Village/ Town Fixed Effects	Regressio with Villag Town Fixe Effects + Controls*
Government-run Schools	24.5%	34,525	-	-	-
Non-formal Schools	28.0%	393	3.5%	-2.7%	-2.4%
Private Aided Schools	19.1%	3,371	-5.4% ***	-1.3%	-0.4%
Private Schools	25.2%	9,098	0.7%	-3.8% ***	-7.8% ***

* Controls include a full set of visit-level, teacher-level, and school-level controls
Note: Significant differences are indicated by ***, **, and * for significances at 1, 5, and 10 percent

Table 5

Correlates of Health Worker Absence (HLM, with District-Level Fixed Effects)

(Dependent Variable = Visit-Level Absence of a Given HC Staff Member: 0 = Present, 100 = Absent)

	Estimates from the multicountry sample (excl. Bangladesh)		Countries where coefficient has same sign as multicountry coefficient
	Coefficient	**Standard error**	
Male	-0.628	1.475	IND***
Tenure at facility (years)	0.081	0.382	IDN, PER
Tenure at facility squared	-0.008	0.011	IDN, PER
Born in PHC's district	-1.404	0.873	BNG***, IDN
Doctor	3.380**	0.754	BNG**, IND***, IDN, PER, UGA***
Works night shift	-4.267*	1.066	BNG, IND***, IDN, PER, UGA
Conducts outreach	6.617***	0.620	IND***, IDN, PER
Lives in PHC-provided housing	-0.583	1.507	BNG**, IDN, PER, UGA*
PHC was inspected in last 2 mos.	-1.975*	0.624	BNG, IND, IDN, PER, UGA
PHC is close to MOH office	0.768	1.999	BNG, IND*
PHC has potable water	-3.352*	0.844	BNG, IND***, IDN*
PHC is close to paved road	-6.076	3.042	IND, IDN***, PER
Dummy for 1st survey round	-12.457	11.180	IDN***, PER*, UGA**
Constant	38.014***	1.538	BNG, IND***, IDN***, PER**, UGA***
Observations	27894		

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

Regressions and HLM estimation also included dummies for days of the week (not reported here). Where applicable, regressions also included dummies for urban area (Peru) and for type of clinic (Bangladesh, India).

Bangladesh is excluded from HLM because matching across the two survey rounds was not possible, as first-round data are drawn from a separate survey