

Teachers and Medical Worker Incentives in India

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Introduction

While the focus of education and health policy in developing countries such as India has largely centered on increasing the resource base and the number of government-run schools and clinics, much less attention has been paid to the question of how efficiently the allocated resources are spent. However, given the extent of the leakages in government spending, it is essential for policy discussions (especially involving large outlays of public funds) to be accompanied by a thorough examination of the incentive structures facing each agent in the chain from policy formation to actual implementation. Since salaries account for the largest fraction of most government spending, it could be argued that getting incentives right for government personnel is the single most important² requirement to increase the effectiveness of government, especially in service provision to the poor³.

The magnitude of the problem

The scale of the incentive problem for teachers and medical workers can be gauged by the extent to which they are simply absent from work. In recent research (with Michael Kremer, Nazmul Chaudhury, Jeffrey Hammer, and Halsey Rogers), we find – using representative data from the 19 largest states⁴ accounting for 98% of India’s population – that on any given day 25% of teachers in government schools and 40% of medical workers in government health clinics cannot be found at the facility. These estimates are based on direct physical verification⁵ of the presence of staff assigned to the facility and exclude those who are on deputation, on another shift, or are not supposed to be based at the facility for any other reason. There is wide variation in provider absence levels across states with teacher absence ranging from 15% (Maharashtra) to 42% (Jharkhand) and doctor absence ranging from 30% (Madhya Pradesh) to 71% (Bihar).

Of course, while provider presence is a necessary condition for the delivery of quality outcomes in health and education, presence is by no means sufficient. The absence numbers above are a bare minimum estimate of the problem, because in many cases providers are present but not actively working. For instance, while 25% of teachers were absent, another

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² This is a point that is well understood in the private sector, where for instance, Jack Welch (the former CEO of GE) said that he used to spend 70% of his time on people development and management and creating the environment and motivation for them to perform at consistently high levels.

³ The World Development Report (2003) with the theme of “Making Services Work for Poor People” has served to focus attention on this issue.

⁴ See Chaudhury et al (2006) for details of the cross-country project that this research was a part of, and Kremer et al (2005) for detailed results on teacher absence. All results discussed in this essay are based on these two papers unless stated otherwise.

⁵ The importance of direct physical verification of provider presence is borne out by the fact that in Andhra Pradesh (where I have more data from currently ongoing research) the teacher absence rate based on direct observation is 25%, while the absence rate on the previous day as measured by the official attendance record is only 15%.

25-30% were in school but not teaching and so less than half of the teachers were engaged in teaching activity. The state-level variation in teachers who were not found engaged in teaching activity ranged from 41% in Maharashtra to 81% in Chhatisgarh.

Salary Level and Structure

An often-heard reason for poor performance by government employees is that they are not paid enough. But, we don't find any evidence to suggest that this is the case. If anything we find that more highly paid teachers in public schools are in fact *more* likely to be absent, with absence being higher among more educated teachers, older teachers, and teachers holding higher ranks (all of which are associated with higher pay). On the other hand, private school teachers – who are on average paid *much lower* salaries (as low as *one-tenth* as much as regular government school teachers in many rural areas) – are less absent and more likely to be teaching when they are present.

The main theoretical reason for expecting a high wage 'level' to induce high effort is if we believe that this is an 'efficiency wage' situation. Under this scenario, employees are afraid of being fired if caught shirking, and the consequent loss of the 'premium' over the market-clearing wage provides an incentive to work hard. We can see that this model does not apply here because only 1 head teacher in our sample of nearly 3000 government primary schools had *ever* dismissed a teacher for repeated absence, even though the absence rates are so high. Compare this with the 35 head teachers out of the 600 rural private schools in our sample who had done so, which implies that delinquent teachers in private schools were 175 times more likely to have action taken against them, though their salary levels are much lower!

The discussion above highlights an important distinction that is often forgotten, which is that while the "level" of salary is an important component of determining who gets attracted to a profession, it is the "structure" of pay (in terms of the relation between performance and pay) that determines how hard people work once they are in a job. Studying the compensation structures in one of India's leading IIT-JEE coaching centers is highly illustrative. Teachers here are paid between Rs. 2 lakhs/year to Rs. 20 lakhs/year with only the very best teachers making near the top end of that range. The institute bases the rating and compensation on a combination of hours of teaching, student feedback, creation of new pedagogical content, and a carefully constructed metric of "Rank Potential Improvement" that uses internal tests to measure the extent to which faculty have *improved* the potential of a student. The salient point here is not the higher average pay as much as its *range*, which is what makes it possible to reward good performance without the unbearable financial burden of increasing salaries across the board.

Preliminary results from ongoing research in Andhra Pradesh (with Venkatesh Sundararaman) suggest that even providing small monetary bonus payments (with an average annual bonus typically less than half a months' salary) to teachers on the basis of the average *improvement* in student performance on independently administered tests led to large gains in student learning outcomes. Students in schools that (randomly) received the incentive programs outperformed those in control schools by nearly 0.19 standard deviations in mathematics and 0.12 standard deviations in language, which are very substantial effects (another way of describing the results is that a median student in an incentive school would perform at around the 56th percentile in a control school). The fact that this study was carried

out in a representative sample of government schools in Andhra Pradesh provides external validity to the experimental results and also shows that it is possible to implement performance pay measures in government schools, if the metrics are thoughtfully designed and transparently implemented.

Working Conditions

While we don't find any relation between higher salaries and teacher absence, we do find that better working conditions are associated with lower rates of teacher absence. Teacher absence is considerably lower in schools with better infrastructure, a potentially important element of working conditions. We compute an infrastructure index that assigns one point each for the existence of toilets for the teachers, an electricity connection, a library, covered classrooms, and non-mud floors. Under this specification, each point on the index is associated with a 1.0 – 1.5 percentage point reduction in the probability of absence – so that moving from 0 to 5 on the index reduces the predicted absence rate by 5.0 to 7.5 points. Our data also show that teachers in schools that are far from a paved road are nearly 4 percentage points less likely to be in school than those closest to a road.

Monitoring and Supervision

Although school inspectors do not have much power, teachers in schools that had been inspected in the three months prior to the visit were about two percentage points less likely to be absent, suggesting that the role of formal monitoring and supervision may be important. One problem with simply having more inspectors (and with more power) is that they might be able to extract bribes from teachers in return for inaction when faced with shirking teachers. A clever solution is proposed by Duflo and Hanna (2005), who study the effects of basing teacher salary payments (in a sample of NGO-run schools in Udaipur district) on photographic evidence of teacher presence in the school (schools were given a camera with a time-date stamp and teachers were supposed to take pictures of themselves with the class at the beginning and end of each working day). They find that teacher absence in the (randomly chosen) camera schools was 18% compared to 36% in the control schools and that student performance went up by 0.17 standard deviations relative to control schools. The main lesson to be learnt from this experiment is not only that monitoring works, but also that creative use of technology can solve the verifiability problem of ensuring provider attendance in remote areas.

Conclusion

Our evidence on teacher and medical worker absence suggests that a substantial portion of public resources spent in health and education is being wasted. Given the deadweight loss of raising tax revenue, the true social cost of inefficient spending is even higher than just the financial cost of absent providers. If we want additional spending on education and health to result in superior outcomes as opposed to inefficiently bloated salary bills, we need to think hard about how compensation and incentive structures can be designed to elicit continuous high performance. A unifying theme that comes through from the discussion of pay, working conditions and monitoring is that what matters most is not lump-sum incentives such as the 'level' of pay as much as the *marginal* incentives (pay for performance, working conditions, and monitoring) since these are what determine the level of effort exerted on the job.

There are, of course, well known difficulties with providing incentives in contexts where agents have to perform on multiple dimensions with differential ease of measurement (the multi-task moral hazard problem), and report to multiple principals with potentially different objectives – aspects that are especially true in the context of publicly provided goods⁶. But the difficulty of designing universally applicable incentive systems should not prevent us from thinking about the appropriate set of monetary and non-monetary incentives in specific contexts, to ensure the efficiency of service delivery. Improving incentives for provider attendance⁷ at work would be a good start.

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⁶ See Dixit (2002) for an excellent overview of the literature on incentives in organizations in general and in the public sector in particular.

⁷ See Banerjee and Duflo (2006) for a discussion on strategies for improving provider attendance in health and education.