

## Why are teachers absent? Probing service delivery in Peruvian primary schools

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### Abstract

A high rate of absence of teachers from their posts is a serious obstacle to delivery of education in many developing countries, but hard evidence on the problem has been scarce. This study, carried out as part of a new multi-country survey project, is the first systematic investigation in Peru into the extent and causes of teachers' absence from schools. Data from our nationally representative survey of public primary schools, based on unannounced visits and direct observation of teachers, reveals that public school teachers in Peru are absent from their posts 11 percent of the time. While this overall absence rate is low compared with those of other survey countries, the absence rates in Peru's poorest and remotest communities are much higher—16 and 21 percent, respectively. In our multivariate analysis of the causes of public school teacher absence, we identify several important variables that are associated with increased absence: poor working conditions, such as poorer communities and infrastructure; teachers with fewer ties to the school's community; contract teaching; and, perhaps, an absence of private competition. By contrast, proxies for more vigorous top-down and bottom-up monitoring are not associated with lower absence. These results, together with the relatively high overall public school teacher attendance rates in an environment where financial incentives for performance are weak, suggest that non-pecuniary incentives are important determinants of teacher performance.

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## 1. Introduction

In education, the quantity and quality of public service depends crucially on the motivation of front-line employees. Education, it has been remarked, has changed little in the past century: it still usually requires a teacher leading a classroom full of students, meaning that the physical presence of both is required. In a developing-country setting, where substitute teachers are uncommon, absence of a primary-school teacher may have various consequences—doubling up of classes, idle time for students, and even student dropouts if absence becomes frequent enough. But learning is not likely to be one of them.

This paper probes the extent and correlates of public school teacher absence in Peru. First, it provides the first representative national estimates of public school primary-teacher absence rates, based on direct observation during unannounced visits to a random sample of schools. Second, it explores the potential institutional, individual, and school-level explanatory factors that are most correlated with absence. It closes with some tentative policy implications of these findings.

## 2. Literature review: what do we know about teacher absence?<sup>1</sup>

Until recently, the problem of high levels of absence among teachers has not been the subject of much detailed empirical analysis. In the case of developing countries, a handful of recent studies have looked into the extent of teacher absence using direct observation, but they have generally used samples that are either non-representative or are representative of particular subnational areas (Glewe, Kremer, & Moulin, 1999; PROBE Team, 1999). Major exceptions include the other papers from this project (mentioned below), as well as two recent studies based on surveys from Papua New Guinea (World Bank, 2004) and Zambia (Das, Dercon, Habyarimana, & Krishnan, 2005) that are roughly nationally representative. These latter studies found national absence rates of 15 percent and 17 percent, respectively, among primary-school teachers. Even in developed countries, the empirical literature on teacher absence is sparse (Ehrenberg, Rees, & Ehrenberg, 1991; Norton, 1998), and there are no studies using nationally representative samples based on direct observation of teachers.

Within Peru, the same is true: there has been no such nationally representative study, although some research has begun to examine the extent of provider absence. One recent study examined a non-random sample of 16 rural public schools and found that only 59 percent of the scheduled time is actually used, in part because of a teacher absence rate that reached 21 percent (Montero, Oliart, Ames, Cabrera, & Ucelli, 2001). Additional evidence comes from a recent pilot program rewarding teachers for attendance; a baseline survey of 1123 teachers in 450 public schools found absence rates ranging from 5 to 16 percent (Cueto & Alcázar, 2004).

In short, there are few systematic studies based on nationally representative data that give insight even into the extent of teacher absence, let alone its possible determinants.

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<sup>1</sup>The term “absenteeism” is sometimes used to refer to the problem of high levels of absence among teachers. We use the term “absence” instead, because absenteeism typically implies that providers are irresponsible or derelict in their duties. While this implication is sometimes correct, we recognize that absence is sometimes caused by circumstances beyond the control of the teacher, such as illness or official duties. What we are interested in investigating is the extent and causes of excessive absence, at least some of which seem likely to involve incentive structures.

If ensuring that teachers are present on the job is at least necessary for making progress in the sector—even if it is not sufficient—then gaining a better understanding of why so many are absent seems essential to meeting education goals. This study aims to help fill these gaps in the case of Peru.

### 3. Study approach and methodology

The surveys that provide the data for this study were carried out as part of a multi-country World Bank study of absence among service providers in education and health, initiated in 2002 by five of the authors of this study. The project encompassed six countries: Peru, Bangladesh, Ecuador, India, Indonesia, and Uganda. Its goal was to measure teacher and medical provider absence using a common facility survey instrument and methodology. (For more details on the global study, see Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006).

Following the methodology used in the multi-country project, data for this study were gathered primarily through direct physical observation of provider attendance, followed by interviews with school directors and individual teachers, carried out during unannounced visits to a random sample of 100 public primary schools distributed in seven regions representative of the coast, sierra (or mountain region), and jungle of Peru.<sup>2</sup> Using a teacher roster and schedule obtained from the director, the enumerator drew up the list of teachers to be observed and interviewed.<sup>3</sup> The enumerator then worked his or her way around the school twice, first to check on whether each teacher was present, then to carry out detailed teacher interviews.<sup>4</sup> The calculations of absence later in this paper were based on the observations. To allow more than one observation of the attendance of each teacher, and to ensure that enumerators could interview many teachers who were absent during the first visit, each school in the sample was visited twice.

To complement the data collected through questionnaires at the school and individual level, we carried out a parallel effort to gather institutional information (described in Section 4) about both the formal educational institutions and how these institutions work in practice. We collected this information by drawing on existing sources and by surveying a non-random sample of key informants—higher-level education officials, non-government experts, and a sub-sample of head teachers.<sup>5</sup>

### 4. Absence and incentives: conceptual framework and Peruvian institutional context

This section briefly reviews the conceptual underpinnings of the quantitative analysis that appears in Section 6, focusing on principal-agent and intrinsic-motivation models of teacher behavior. It then contrasts those theoretical sources of teacher motivation with the

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<sup>2</sup>Details on the sampling procedures are available from the authors.

<sup>3</sup>The list included all of the teachers normally scheduled to be on duty, unless the school had more than 15 teachers, in which case a random sample of 15 was selected.

<sup>4</sup>If instead the enumerator had stopped in each room long enough to interview the teacher before verifying the presence of the other teachers on the list, it is possible that the director would have had time to get word to absent teachers that they should return to the school in time to be recorded as present. Note that the visits were staggered throughout the school day, to ensure that the survey was not simply counting late arrivals as absent teachers.

<sup>5</sup>Six experts (government officials, ex government officials and non-government experts) and 10 public school directors filled an institutional questionnaire.

incentives likely provided by the institutional context in Peru, using information from our qualitative survey of education experts and practitioners.

#### 4.1. Conceptual framework

Standard principal-agent theory provides a framework for analyzing incentives of public service providers (World Bank, 2003, Chapter 3). In this framework, public school teachers can be seen as agents for multiple principals, including parents, communities, and government agencies with responsibilities for the delivery of education services. The objective is to induce teachers to exert effort to provide a good service and to restrain from opportunistic behavior, such as absenteeism.

A large literature has developed to deal with the incentive issues that arise in the context of the principal-agent framework due to the asymmetry of information between teachers (agents) and parents or government representatives (principals). In this framework, better-informed parents, for example, would exert more pressure on teachers to provide a better service and not shirk. Thus, we would expect to observe lower teacher absence rates in communities where parents are more educated and involved in the school activities. An emerging strain of the education service-delivery literature emphasizes the positive role that community involvement can play in school management (Jimenez & Sawada, 1999). Evidence from Nicaragua, for example, suggests that giving greater discretion to parents and communities can reduce teacher absence (King & Ozler, 2001). If top-down monitoring is effective, we would also expect better teacher performance in public schools located closer to Ministry of Education offices or visited more frequently by Ministry representatives.

Similarly, agency theory has studied the effects of government payment systems on the incentives and behavior of public service providers (Dixit, 1997). These studies have even motivated reforms in public sector management to emphasize performance management and incentives (Goddard, Mannion, & Smith, 2000). Within this framework, public school teachers, for example, would be motivated to exert more effort and less opportunistic behavior if there are payments linked to performance and in the presence of disciplinary measures.

In addition, intrinsic motivation has also been considered as an incentive to perform or restrain from opportunistic behavior. Some authors have suggested that workers may be motivated by professional ethics or other non-pecuniary factors, including the organizational and the social context (Franco, Bennet, & Kanfer, 2002). For example, teachers will be more motivated to refrain from opportunistic behavior if they feel more attached to their students or the communities where they served or if they feel comfortable with the conditions of their workplace.

According to this conceptual framework, Peruvian public schools teachers' absence rates should depend on the incentives and constraints they face, in addition to the relevant logistical issues (such as length of commute and family responsibilities) that do not usually appear in these models. Before proceeding to the statistical analysis of these effects, it is important to understand the institutional context in which these teachers work.

#### 4.2. Institutional context

Peru's public education sector includes two types of teachers: regular ("nombrados") and non-regular ("contratados"). While regular teachers enjoy very high job stability,

non-regular teachers are hired for a specific period (normally a school year), and their contracts may or may not be renewed for the next period. In addition, regular teachers enjoy various benefits—including vacations, leaves of absence, and pensions—that non-regular teachers do not receive. In 2002, approximately 17.5 percent of all public-school teachers (preschool, primary, and secondary) were non-regular. The number of non-regular teachers had decreased substantially in previous years, as large national “competitions” were held to cover existing teachers’ posts with new regular teachers.<sup>6</sup>

The legal framework that governs the public schools teacher’s career can fairly be described as a hierarchical system in which teachers move up by fulfilling formal requirements after a given number of years of experience.<sup>7</sup> By law, regular teachers enjoy a very high degree of security in their posts, so that they face virtually no risk of being dismissed for excessive absenteeism. Moreover, interviews with informed respondents indicate that in practice, there is very little incentive to perform well and few penalties for performing badly.

#### 4.2.1. Hiring and assignment

According to the law, teachers enter the public system as regular teachers (*nombrados*) after evaluation by the regional intermediate education units. For many years, because of budgetary restrictions, intermediate units were not allowed to hire new teachers as regular teachers, and so most hirings were non-regular. In 2001, the government implemented new procedures to regularize teachers and hire new ones. The hiring of regular teachers is now based on large national competitions, which include written examinations organized by the Ministry of Education. Applicants who obtain better grades in the evaluation are rewarded with more desirable posts. By law and in practice, once an assignment is made, a teacher is not re-assigned to another post without his or her explicit consent, except in very rare cases.

According to our non-random survey of a small but well-informed group of ministry officials and sector experts, in practice the most important factors affecting the hiring decision are the exam results and the academic level of the candidates. However, these same sector experts also cite illegal payments and political connections as very important factors affecting hiring.

#### 4.2.2. Salaries and bonuses

According to salary data from soon before the survey, the average public school teacher salary is S/728.26 (US\$ 211) per month. Teachers that hold an education title (*titulados*) earn on average a larger salary than those that do not—S/787.88 (US\$ 228) y S/668.64 (US\$ 194), respectively.<sup>8</sup> In general, the differences in salary among the different career levels are quite small,<sup>9</sup> and the salary structure does not discriminate among specializations. Notably, there are no salary incentives related to performance.

<sup>6</sup>By “competitions” we mean the selection process designed to evaluate teachers. Within this process, teachers receive points through an exam and evaluation of professional experience.

<sup>7</sup>The framework is set out in the *Ley del Profesorado* and the general Law of Public Servant Careers.

<sup>8</sup>This information corresponds to year 1999 and is provided by Ministry of Education Staff Unit. Since then teachers have received flat salary increments of 50 soles in 2002, 100 soles in 2003, and 115 soles in 2004.

<sup>9</sup>Díaz and Saavedra (2002) analyzed salary structure and found that the difference between one level and the next fluctuates around 1.5 and 3 percent.

### 4.2.3. Monitoring and discipline

Disciplinary sanctions are determined by each decentralized implementing unit. In rare cases, pressure from individual schools principals and parent organizations can lead to the imposition of sanctions. Sanctions usually take the form of verbal or written warnings. Only in exceptional cases are teachers suspended or dismissed, and in these cases, the decentralized unit must follow a complex procedure to apply the sanction. According to our interviews, in recent years the primary reasons for the dismissal of teachers have been physical and sexual abuse of students, alcoholism, and other major misconduct. By contrast, milder sanctions are most often applied in response to problems of absenteeism and other illegal behavior. According to the directors and sectors experts that we interviewed, it can take many months (if it is possible at all) to dismiss a teacher who has been absent for long and repeated periods.<sup>10</sup>

### 4.2.4. Summary—effects on teacher incentives

Thus public school teachers appear to have few incentives to avoid absenteeism or minor misconduct, at least in practice. Hiring decisions are ostensibly made on merit but, according to informed observers, are substantially influenced by connections and bribery. Transfers to desirable locations appear also to be mediated by these non-meritocratic factors, reducing the incentive to perform well. Salary is set primarily based on tenure and characteristics of the job or location, rather than on performance in a given position. And serious disciplinary sanctions are sufficiently difficult to implement, in practice, that they appear unlikely to restrain teacher behavior.

We should note that the lack of formal incentives related to salary or tenure does not necessarily mean that public school teachers will perform poorly. As mentioned above, it is possible that there are other non-salary-based pecuniary rewards, such as recognition or freedom from community displeasure. In addition, and perhaps most importantly, teachers may be intrinsically motivated. This will depend on whether teacher selection procedures can effectively identify those who enter the profession for intrinsic reasons, and whether directors are able to create an environment that nurtures those motivations. We return to this discussion in Section 6 below.

## 5. Descriptive results: what is the extent of absence and who is absent?

In calculating public school teacher absence rates, we have taken what we believe to be a conservative approach, by excluding various categories of teachers who might artificially inflate the absence rate. First, we exclude an observation when the teacher is reported by the head teacher to have retired or been transferred, or is not supposed to work on the current shift. Because there is no way of verifying these claims using the facility-visit approach, this choice will make the overall absence estimates more conservative. Second, we further restrict the analysis to only those teachers who were reported to be working full time. Because we have already omitted teachers reported as being “on another shift,” this

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<sup>10</sup>In the 100 schools in our sample, only four headmasters reported ever having fired a teacher for excessive absence, late arrival, or early departure. Although this is a much higher rate than found by a companion survey in India—where only 1 in 3000 public-school head teachers had ever done so (Kremer and others, 2005)—it is most likely that those fired in Peru were contract teachers, not regular teachers. Only two head teachers reported ever having transferred a teacher for excessive absence, even though it should be easier to transfer a regular teacher than to fire one.

Table 1  
Primary school teachers absence: evidence from the multicountry study

	Absence rate (%)
Bangladesh	16
Ecuador	14
India	25
Indonesia	19
Peru	11
Uganda	27

Note: 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).

Source: Chaudhury and others (forthcoming).

step should be superfluous. Nevertheless, it should remove any doubt about whether shift workers are counted as absent when they are not supposed to be on duty.

In calculating absence rates, we code as absent any teacher who could not be found **anywhere in the school** at the time of the random visit. Restricting the sample as described above gives us a database of 1643 absence observations, with each observation consisting of a teacher/round pair. In total the sample includes 834 fulltime public school teachers, of which most were observed twice each.<sup>11</sup>

Within this sample, the overall public school teacher absence rate for the two rounds is 10.6 percent. There is substantial variation between the two rounds: 12.5 percent of teachers were absent during the first round of visits, compared with only 8.7 percent in the second round.<sup>12</sup> To place these figures in a comparative context, [Table 1](#) gives the public school primary-teacher absence rates for six countries in the global teacher absence project and two other countries for which we have parallel surveys.

Peru has the lowest rate in this sample of countries, but that ranking does not necessarily imply that public school teacher absence is not a problem. First, it does not indicate whether Peru would be performing well on teacher absence once we controlled for other characteristics. In fact, on the simple regression line relating income to absence, Peru does not appear to be an outlier ([Chaudhury et al., 2006](#)). Second, as we will see below, teacher absence in Peru is concentrated in precisely the areas—notably poor and rural communities—that are most disadvantaged in terms of educational attainment.

What reported reasons are given for these public school teachers' absence? [Table 2](#) shows that of the teachers who were recorded as absent by our survey enumerators, only about 21 percent were reported to be out of school for reasons that would generate a leave record of some kind—that is, authorized leave and sickness. Another 13 percent were reported as being away from the school on some official duty. Thus even if we take the “official duties” and leave reports at face value, we are left with two-thirds of the absent

<sup>11</sup>The exact number varies by round, since a teacher may be excluded from one round but not the other, if her employment status or shift schedule has changed between the two rounds.

<sup>12</sup>This reduction is large enough to raise speculation that a “prior warning” effect (or “observation effect”) could have reduced absence during the second visit, especially given that a second-visit dummy is significant in all of the regressions presented in Section 6. Although the enumerators reported no evidence of such an effect, it is therefore conceivable that Peru's actual absence rate is somewhat higher than reported here.

Table 2  
Reasons given by school directors for the absence of full-time teachers

	Number of teachers	Percentage of those absent
Official teaching-related duty	14	8.1
Leave for administrative tasks	8	4.6
Sick	16	9.3
Authorized leave	24	13.9
Expected to arrive later	4	2.3
Went to pick up salary	4	2.3
Unauthorized absence	17	9.9
Suspended	5	2.9
Other	9	5.2
No reason given	72	41.8
Total absent	173	100

Source: Authors' calculations.

teachers who are out of school for other reasons. A quarter of the absent (26 percent) were missing for reasons that were neither connected with official duties nor with the authorized leave. And the plurality (41.8 percent) consists of teachers for whom the head teacher provided no reason—typically because the head teacher had reported the teacher as present, even though the enumerators were unable to find the teacher in the school.

A final question concerns the distribution of absences: do a small number of teachers account for the bulk of the absences, or is the problem widespread? Analysis in the multi-country paper shows that in Peru, unlike neighboring Ecuador, the distribution is consistent with a widely shared absence problem (Chaudhury et al., 2006).

## 6. Why are public school teachers absent?

Before turning to multivariate analysis of the absence data, it is worth seeing how absence correlates with certain geographic, school, and day-of-the-week variables (Appendix Table 2). These bivariate correlations are likely to be of policy interest, even if they conflate other missing factors that require multivariate analysis to tease them out. What do they show? Geographically, absence is concentrated in poor and remote schools: Teachers at public schools in higher-poverty districts are absent twice as often as other public school teachers, and for teachers at remote public schools (measured by distance to a paved road), absence rates are two and a half times those of other public school teachers. There is also some bunching of absence during the week: public school teachers' absence rates are significantly higher on Mondays and Tuesdays than on Wednesdays and Thursdays.

We use multivariate analysis to isolate correlations with various factors that may affect absence (Table 3). The dependent variable in each case is an absence dummy variable: 1 if the teacher was absent during that visit, 0 if he or she was present. As the core econometric specification in this section (in Columns 1–4), we use a random-effects probit model for



Table 3  
Correlates of teacher absence

	Dependent variable: 1 if teacher was absent during a given visit, 0 if teacher was present						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probit—Teacher-level random effects				Core spec.—Alternative estimation		
	Core specification	Core with additional regressors			Random-effects OLS	Probit—Marginal-effects, teacher-level clustering	Probit—Marginal-effects, school-level clustering
Survey: Second-round observation visit to school	−0.216** [0.101]	−0.214** [0.107]	−0.213** [0.102]	−0.208** [0.102]	−0.034** [0.016]	−0.031* [0.017]	−0.031** [0.014]
Poverty rate (district, %)	0.825 [0.515]	0.421 [0.567]	0.639 [0.534]	0.919* [0.524]	0.084 [0.074]	0.120 [0.089]	0.120* [0.067]
Remote school: Nearest paved road > 15 km away	0.454** [0.189]	0.295 [0.207]	0.395** [0.188]	0.444** [0.194]	0.087*** [0.031]	0.081* [0.042]	0.081** [0.040]
Rural area	−0.362* [0.219]	−0.163 [0.243]	−0.352 [0.218]	−0.361 [0.222]	−0.075** [0.035]	−0.046** [0.022]	−0.046** [0.022]
Male	0.081 [0.108]	0.149 [0.114]	0.073 [0.110]	0.070 [0.110]	0.010 [0.018]	0.012 [0.016]	0.012 [0.016]
Head teacher	0.233 [0.223]	0.325 [0.231]	0.228 [0.224]	0.233 [0.224]	0.054 [0.043]	0.039 [0.052]	0.039 [0.046]
Contract teacher	0.680*** [0.201]	0.648*** [0.215]	0.691*** [0.204]	0.675*** [0.205]	0.141*** [0.038]	0.147*** [0.050]	0.147*** [0.050]
Teacher completed bachelor's degree	0.285*** [0.104]	0.282** [0.113]	0.313*** [0.106]	0.290*** [0.105]	0.044*** [0.016]	0.043** [0.019]	0.043*** [0.016]
Infrastructure: School has toilet facilities	−0.842** [0.336]	−0.701* [0.373]	−0.764** [0.339]	−0.818** [0.338]	−0.215*** [0.068]	−0.201** [0.088]	−0.201 [0.129]
Infrastructure: School index, range 0–5	−0.087* [0.050]	−0.105* [0.055]	−0.071 [0.051]	−0.072 [0.051]	−0.016* [0.008]	−0.013 [0.008]	−0.013* [0.007]
Local origins: Teacher born in this district	−0.403*** [0.150]	−0.297* [0.156]	−0.379** [0.151]	−0.447*** [0.156]	−0.066*** [0.023]	−0.048*** [0.018]	−0.048*** [0.015]
School size: Total number of teachers on staff	0.007 [0.007]	0.010 [0.007]	0.014* [0.008]	0.005 [0.007]	0.001 [0.001]	0.001 [0.001]	0.001 [0.001]

Table 3 (continued)

Dependent variable: 1 if teacher was absent during a given visit, 0 if teacher was present							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probit—Teacher-level random effects				Core spec.—Alternative estimation		
	Core specification	Core with additional regressors			Random-effects OLS	Probit—Marginal-effects, teacher-level clustering	Probit—Marginal-effects, school-level clustering
Monitoring: Nearest MinEd office > 15 km away	−0.223 [0.163]	−0.149 [0.178]	−0.204 [0.165]	−0.248 [0.167]	−0.022 [0.024]	−0.030 [0.023]	−0.030 [0.019]
Maternal literacy rate		−0.250 [0.323]					
Private competition: Private school exists in town			−0.408** [0.185]				
Teacher requested assignment here				−0.205* [0.108]			
Constant	−1.043* [0.539]	−0.897 [0.590]	−0.872 [0.556]	−1.038* [0.541]	0.266*** [0.095]		
Observations	1440	1306	1416	1400	1440	1440	1440
Number of Unique teacher ID	772	704	760	749	772		
Wald chi2	76.7663	69.4932	82.5131	79.3687	95.9722	103.6818	92.0666

Notes: (1) Standard errors in brackets, (2) All regressions include dummy variables for the day of the week and the geographical department in which the school is located.

\*significant at 10%;

\*\*significant at 5%;

\*\*\*significant at 1%.

what is in effect a two-visit panel, with each individual teacher serving as the  $i$  variable. [Columns 2–4 introduce added regressors to the core specification; these variables are excluded from the other columns, however, because they limit sample size too much or are likely to be endogenous to absence.] As a robustness check, the right half of the table shows the core results using alternative estimation techniques: random-effects OLS (Column 5) and marginal-effects probit with errors clustered at the school and teacher levels (Columns 6 and 7, respectively).<sup>13</sup> These final three columns also have the virtue of presenting coefficients that are easily interpreted as the percentage change in predicted absence rates.

## 6.1. Community characteristics: poverty and remoteness

We focus first on community-level variables—that is, the regressors that are most exogenous to the attendance decision of the teacher.

### 6.1.1. Poverty

Across countries and across Indian states, national and per-capita income is a strong predictor of teacher absence rates (Chaudhury et al., 2006). In Table 3, the district-level poverty rate proxies for income level. Poverty may increase absence through a variety of mechanisms; for example, it may reduce the power of communities to hold teachers accountable in a principal-agent framework, or it may worsen work conditions and lower teachers' intrinsic motivation. The bivariate correlation between absence and poverty is large and statistically significant, and the coefficient on poverty is robustly positive in the Table 3 regressions. It is statistically significant in only two specifications, however, suggesting that the effects of poverty are mediated primarily through other variables included in Table 3. Where it is significant, the predicted magnitude remains large: increasing the district poverty rate from 0 to 100 percent increases the predicted teacher absence rate by 12 percentage points.

### 6.1.2. Remoteness

The remoteness of a school may also predict higher absence, for two reasons. The first is logistical: transportation difficulties in remote areas may make it harder for a teacher to arrive at school on time. Second, from the perspective of teacher motivation, remote posts may be less attractive to teachers—meaning less intrinsic motivation, in our conceptual framework. Teachers in these remote locations may spend more time away from their postings, for example heading to urban areas for weekends. A previous study on incentives for teachers working on rural and remote areas in Peru found that one of the main reasons for teacher dissatisfaction with their assigned post was that the teachers have to live separated from their immediate relatives (Alcázar & Pollarolo, 2000).<sup>14</sup> The finding on distribution of absences through the week (not shown) is consistent with this story. Compared with Tuesday, the lowest-absence day, the coefficients for the Monday,

<sup>13</sup>One other alternative would be to use ordered probit; under this alternative, the dependent variable would be the number of times a teacher had been absent over the two visits (0, 1, or 2). Our specification has the advantage of making use of the information for teachers who are in the dataset for only one of the two visits—for example, those who were on staff at the time of the first visit, but had been transferred before the second visit.

<sup>14</sup>Consistent with this story, in our sample the absence rate for teachers with school-age children who lived apart from them was 18 percent, compared with 9 percent for other teachers.

Thursday, and Friday dummies are large (always between 2 and 6.5 percentage points) and often statistically significant, suggesting that staff were often absent on what could be long weekends.

Being located 15 or more kilometers away from a paved road raises the predicted probability of absence by some 8–9 percentage points, a very large effect.<sup>15</sup> Note that this strong association survives in almost all specifications, despite the inclusion of the highly correlated poverty variable.

Interestingly, once the distance-to-paved-road and poverty variables are included, the coefficient on the district-level “Rural area” variable turns negative. Why might we see this surprising result? One possibility is that the negative coefficient on Rural area reflects the effect of rural-area incentives and bonuses given to public school teachers posted in officially designated rural areas, if these bonuses induce better performance in a way that largely offsets the increases absence associated with remote areas. This possibility is intriguing, but would require further evidence. For one thing, the bonus is relatively small, at less than 10 percent of base salary; for another, some urban public school teachers who were formerly designated as “rural teachers” still receive the bonus.

Note that by contrast to the remoteness and poverty measures, none of the department dummies (not shown) are statistically significant. (Departments in Peru are the highest level of sub-national jurisdictions, and are analogous to states in many other countries).

## 6.2. Teacher demographic characteristics

Beyond the community characteristics, the characteristics of the individual public school teacher—training, age, gender, marital status, rank—may affect attendance. First we look at the individual demographic characteristics of the teachers. Table 3 suggests that in the case of Peru, there are no significant gender differences in absence rates. The same is true for other obvious demographic characteristics, such as marital status, age, and parental status (not shown here).

## 6.3. Financial incentives

### 6.3.1. Salary

The survey did not collect salary information directly, because confidentiality could not be assured during teacher interviews and because public school teachers are generally paid according to a standardized grid that translates variables such as experience, education, and rank into pay levels. When we examine these variables directly, we see no negative correlation with absence, and in fact there is some positive correlation. Experience is uncorrelated with absence (not shown here), while teachers who are more educated (those with a college degree) and hence paid more are actually absent at robustly higher rates than less educated teachers—more than 4 percentage points higher. Head teachers also earn higher salaries than other teachers but appear to be somewhat more absent. Research on other countries has found that, after other factors are controlled for, head teachers and doctors are absent from primary facilities more often than other personnel (Chaudhury et al., 2006). In Peru, head teachers are consistently absent at rates about 4–5 percentage

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<sup>15</sup>Where this variable was missing, we substituted a time measure of distance, which we had also collected. In these cases, the paved road was coded as “distant” if it was at least 2 h away from the school.

points higher than other civil-servant teachers, although the effect is statistically significant only when the college-graduate variable is excluded. It is possible that more educated and higher-ranking teachers have more administrative duties that pull them away from the school, but higher absence may also reflect these teachers' greater power and ability to evade accountability for frequent absence.

### 6.3.2. Contract status

As we have seen from the summary of the institutions of the educational system, regular (civil-service) teachers in Peru have few obvious pecuniary incentives for good performance. In such a setting, a naïve incentive model would predict that contract public school teachers might exert more effort on the job, at least if performance affects the probability of a contract renewal.

In fact, [Table 3](#) shows the opposite: contract public school teachers are 14–15 percentage points more likely to be absent than civil-service teachers. What might account for this perverse effect of contract status? One possibility is that contract teachers are paid less, and lower pay is likely to be associated with various characteristics that could increase absence—poorer living conditions and less support at home. But it is also possible that the teacher's contract status itself contributes to absence. If a contract teacher is uncertain about her continued employment, the optimal allocation of her time may include some income-earning efforts outside of school, as well as some time spent looking for more permanent employment opportunities. The data are at least consistent with this possibility: 57 percent of contract teachers report outside employment or income-earning activities, compared with just 42 percent of regular teachers.

Furthermore, a contract public school teacher may have fewer non-pecuniary incentives for effort (intrinsic motivation in the conceptual framework). Since the school has not made a long-term commitment to the teacher, the teacher may feel less attachment to the school, and less responsibility for the welfare of students. As large national competitions have allowed many contract teachers to convert to regular-teacher status, those that remain as contract teachers may feel disappointed and less motivated. It is also possible that those who remained as contract teachers after the conversion competitions were particularly weak teachers.<sup>16</sup>

## 6.4. Monitoring and discipline

### 6.4.1. Top-down monitoring

One possible mechanism for inducing greater public school teacher effort is frequent unannounced inspections by local or Ministry of Education officials. Regressing absence on the frequency of inspections at a school is problematic, however, because of possible endogeneity: serious attendance problems at a school may induce inspectors to visit the school more often, which would dampen or even reverse the expected relationship between inspections and absence.<sup>17</sup> Instead, [Table 3](#) includes a measure of the distance to the

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<sup>16</sup>Indeed, if conversion serves as a reward for better-performing teachers, then this may reflect the operation of a successful incentive mechanism, akin to the competitions for academic tenure at the university level.

<sup>17</sup>While this reverse causality is a theoretical possibility, and we attempt to account for it in the analysis below, our institutional survey suggests that it is unlikely. Inspections are not viewed as a serious deterrent to absence, nor as even a serious attempt to monitor and improve performance.

nearest Ministry of Education office, which may proxy for the exogenous intensity of inspections. But this variable is not significant; nor are alternative regressors measuring top-down monitoring intensity, such as the share of schools within the province that have had recent inspections (excluding the school itself). In short, there is little evidence for the inspections story in Peru, perhaps because inspections are believed by teachers to have no consequences.<sup>18</sup>

#### 6.4.2. Bottom-up monitoring by parents

The most obvious vehicle for parental involvement in the management of Peruvian primary public schools is the parents' association (APAFA). Yet in our data, measures of the activity level of the APAFA do not predict lower absence; this result (not shown here) does not change if we switch to a province-level average of the parental involvement variable, to reduce endogeneity problems.

This measure may not fully capture the effects of parental monitoring, however. What may be most important is having informed parents who have the knowledge and connections necessary to discipline poorly performing school directors or teachers. Parents' literacy rates may proxy for that effect; to relate this to the conceptual framework above, literate parents correspond to better-informed principals in the principal-agent models. Our survey collected data on parents' education: for a random sample of 4th-graders, teachers were asked whether each selected student's mother and father were literate (with input from the student if necessary). Although the estimated coefficient on parental literacy is negative, it is not significant when poverty rates are included in the regression. Together, these results suggest that under the current incentive and accountability structure, neither top-down nor bottom-up mechanisms are effective in reducing teacher absence.

### 6.5. Non-pecuniary incentives: community ties and working conditions

In environments such as the Peruvian one, where monitoring and discipline are infrequent and ineffective, pecuniary incentives for performance may have limited effects. We might expect to find greater effects from intrinsic and other non-pecuniary incentives that do not depend on monitoring—such as the opportunity to help the community and attractive working conditions.

#### 6.5.1. Ties to the local area and school

If social pressure on teachers and intrinsic orientation toward service to the community are important, then teachers who come from the area near the school might have lower absence rates. In our data, this effect comes through strongly. A public school teacher who is born in the district where the school is located has a much lower absence rate—some 5–6 percentage points lower—and the effect is generally highly significant.

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<sup>18</sup>Top-down monitoring should also be carried out by the school director. It is not easy to think of a convincing measure of the director's exogenous willingness to enforce teacher performance, however. Earlier versions of these regressions included a measure of school director's past use of disciplinary measures, and this was insignificant, but of course this is endogenous to the severity of performance problems at the school. As with inspection, alternative measures of disciplinary intensity were insignificant.

By contrast, another plausible measure of ties to the community—the public school teacher’s tenure at the school—does not enter significantly. It might be hypothesized that a teacher with longer tenure will feel a greater connection to the community, increasing her non-pecuniary motivation. But in our regressions (not shown here), tenure has no effect at all, even with a quadratic term included.

#### 6.5.2. Working conditions—school infrastructure and equipment

Another factor that may influence teacher absence is the quality of the school’s infrastructure and facilities. As mentioned in Section 4, like other employees, teachers are likely to feel more motivated in a workplace that has more comforts, as well as better school supplies. For this regression, we use as a summary measure a dummy variable indicating whether the school has bathroom facilities. This variable is highly significant (at 1 percent level) and very large, at 20–21 percentage points.

Since that result is driven by a small number of schools, we look also at other types of school infrastructure and equipment. We include as a regressor an infrastructure index, ranging from 0 to 5, that gives equal weight to availability of electricity, lighting, library facilities, computers, and staffroom. Table 3 shows that this measure is also often significant, with a one-standard-deviation increase in the index (about 1.7 points) corresponding to a 2-percentage-point decrease in absence. All this is consistent with the working-conditions story of motivation.<sup>19</sup> So are the Column 4 results, which show that teachers who requested the posting at their current school are significantly less absent than other teachers. If pecuniary motivations drove this request—for example, if teachers requested assignment at schools where that they could receive their salaries with less accountability—then this coefficient would be expected to be positive, not negative.

### 6.6. Competition from private schooling

Another possible source of performance pressure on public school directors and teachers is competition from private schools in the local area. If some students have a credible exit option, or if the private school serves to benchmark performance, the public schools may feel pressured to improve (Hoxby, 1994).<sup>20</sup> The last column of Table 3 includes a dummy variable indicating whether the head teacher reports the existence of any private schools in the town or city where the public school is located.<sup>21</sup> The results show that the private

<sup>19</sup>Of course, it could also be consistent with generalized poor governance in the community, which could manifest itself in both poor teacher performance and poor infrastructure.

<sup>20</sup>As an anonymous referee noted, existence of private schools may also reflect wealth at the community level, since our poverty measure is at the district level. Nevertheless, we believe that the potential benchmarking effects of private competition may be worth considering. Although public schools’ budgets in Peru are not directly related to the number of students, private competition may nevertheless affect the behavior of administrators and teachers, if parents or Ministry of Education officials use private-school benchmarks to exert pressure for performance on public schools. Losing students may also lower public schools possibilities to pressure for more resources or teacher posts. In India, for example, the burgeoning growth of rural private schools has thrown in sharp contrast of the poor performance of public schools and has increased pressure on them to become more efficient.

<sup>21</sup>The question was actually “how many” private schools there were in the town. The question was not asked in Lima/Callao, the capital area, where the difficulty of specifying the relevant area seemed too great, and where we knew *ex ante* that there would be a private school. In coding the private-competition dummy variable, we have set it equal to 1 for all teachers in Lima/Callao.

competition is associated with substantially lower absence rates (about 6 percentage points lower). Since this private-competition variable comes from the public school head teacher rather than official sources, it could be a noisy measure of whether any private schools actually exist. Nevertheless, it should be quite a good measure of whether the head teacher is aware of competing private schools.<sup>22</sup>

## 7. Summary and conclusions

Primary-public school teachers in Peru are absent from their schools 11 percent of the time when they would ordinarily be scheduled to work. While this overall absence rate is low compared with those of other survey countries, the absence rates in Peru's poorest and remotest communities are much higher—16 percent and 21 percent, respectively.

What factors might explain high absence rates? Using random-effects OLS estimation, we found first that fundamental community characteristics matter.<sup>23</sup> A community's remoteness is a strong predictor of higher absence among teachers in its primary public school, and its poverty rate also appears to be correlated with higher absence. These factors could affect teacher absence through various channels, including by worsening the work environment for teachers and by reducing the ability of communities to induce good teacher performance.

Even after controlling for these community variables, certain public school teachers have consistently higher absence rates: contract teachers (those who are not civil servants), more highly educated teachers, and those who are born outside the district where they work. By contrast, teacher demographic characteristics such as gender, age, and marital status are not significant predictors of absence.

Our results provide some support for the idea that non-pecuniary motivations spur better performance in Peru, at least in terms of teacher attendance. First, working conditions seem to be important. Absence is higher not only in communities that are poorer and more remote—and hence less desirable to teachers—but also in schools with poorer infrastructure. Second, the fact that public school teachers born within the school's district are much less likely to be absent suggests that local ties may restrain potentially opportunistic behavior.

By contrast, we did not find strong evidence that, at least as used in Peruvian public education, pecuniary incentives are correlated with better performance. Our proxies for salaries, labor-market exposure, formal inspections, discipline, and local monitoring generally failed to correlate with lower absence. However, the variables included in the analysis may not be good proxies for pecuniary/formal incentives, especially when our review of the institutional context suggested that Peru has no effective discipline or monitoring mechanisms for public school teachers. In such a context, the salary level may

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<sup>22</sup>Note that if absenteeism of public school teachers makes parents seek out private alternatives for education of their children, the reverse causality would lead to the opposite correlation.

<sup>23</sup>Although we summarize the OLS random-effects results here, most of the significant results discussed here retained their significance in an alternative random-effects probit specification. There were three main exceptions: the general infrastructure index and the maternal literacy rate retain their signs but lose their significance, while the head-teacher dummy loses significance in two specifications.



not provide an incentive for attendance at all. In fact, the results could prompt the question of why absence rates are not higher, given the lack of formal incentives for performance.<sup>24</sup>

Our finding that contract public school teachers are absent at much higher rates than are civil servants might seem surprising; contract teachers should face better incentives for performance, since they can be easily penalized by not having their contracts renewed. However, these teachers may have fewer non-pecuniary incentives for effort, since the school or system in general has not made a long-term commitment to them. Since contract teachers are viewed as an attractive low-cost option for expanding public schools in many countries, the question of their motivation levels clearly warrants further study.

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## Appendix A

### Tables A1 and A2.

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<sup>24</sup>One possibility is that teachers are affected by persistent behavioral norms that support better performance—the flip side of the poor-performance Indian norms discussed by Basu (2006). It is not obvious how we would test this hypothesis with our data, however.

Table A1  
Summary statistics for key variables

Variable	Mean	Standard deviation	N
Teacher was absent at time of observation	0.105	0.306	1.643
Poverty rate (district, %)	0.541	0.269	1.648
Remote school: Nearest paved road > 15 km away	0.162	0.369	1.630
Rural area	0.205	0.404	1.648
Male	0.288	0.453	1.644
Local origins: Born in this district	0.156	0.363	1.599
Contract teacher (no civil-service rank)	0.045	0.207	1.584
Head teacher	0.035	0.185	1.644
Infrastructure: School has some toilet facilities	0.981	0.138	1.644
Infrastructure: Index (excl. bathrooms), range 0–6	4.202	1.701	1.640
Discipline: Weighted index (range, 0–19)	4.001	3.846	1.622
Inspections: School inspected this month or last month	0.466	0.499	1.566
Maternal literacy rate	0.859	0.229	1.481
Teacher requested assignment at this school	0.395	0.489	1.576
Completed bachelor's degree	0.387	0.487	1.518
Completed post-graduate degree	0.028	0.166	1.518
Private competition: Private school exists in town	0.689	0.463	1.620
Day of observation:			
Monday	0.263	0.440	1.644
Tuesday	0.196	0.397	1.644
Wednesday	0.270	0.444	1.644
Thursday	0.165	0.372	1.644
Friday	0.105	0.307	1.644
Department:			
Amazonas	0.056	0.231	1.648
Ancash	0.044	0.206	1.648
Ayacucho	0.101	0.301	1.648
Callao	0.051	0.220	1.648
Huancavelica	0.052	0.221	1.648
Ica	0.109	0.312	1.648
Piura	0.082	0.274	1.648
San Martin	0.082	0.274	1.648
Lima	0.423	0.494	1.648
Survey: Second round of observations	0.491	0.500	1.648
Number of teachers			883

Table A2  
Teacher absence rates by correlates of interest

	Mean absence rate (%)		Mean absence rate (%)	Difference
Teacher characteristics				
Female	9.3	Male	13.3	−4.0*
Born this district	8.0	Not born in this district	9.8	−1.8
Contract teacher	19.7	Civil service teacher	9.6	10.1*
Head teacher	22.8	Other teacher	10.0	12.8*
Requested assignment to this school	8.2	Did not request assignment to this school	11.4	−3.2*

Table A2 (continued)

	Mean absence rate (%)		Mean absence rate (%)	Difference
Bachelor's degree	11.2	No bachelor's degree	9.0	2.2
Post-graduate degree	14.0	No post-graduate degree	9.8	4.2
Professional degree (titulado)	9.6	No professional degree	14.5	-4.9
Parent	9.5	Not a parent	11.1	-1.6
<b>School characteristics</b>				
Distance to paved road < 15 km	8.6	Distance to paved road > 15 km	20.2	-11.6*
Distance to Ministry of Education < 15 km	10.4	Distance to Ministry of Education > 15 km	11.4	-1.0
Rural area	15.6	Urban area	9.2	6.4*
Infrastructure: School has toilet facilities	9.9	Infrastructure: School has no toilet	37.5	-27.6*
Infrastructure index (excl. toilet) < median	11.1	Infrastructure index (excl. toilet) > median	8.5	2.6
Discipline index below median	10.5	Discipline index above median	10.5	0.0
School recently inspected	9.5	School not recently inspected	11.8	-2.3
School size below median	11.7	School size above median	9.1	2.6
Recent parent meeting	12.1	No recent parent meeting	8.4	3.7*
Teacher recognition program	12.6	No teacher recognition program	9.3	3.3*
Multigrade teaching	19.1	No multigrade teaching	9.9	9.2*
<b>Community characteristics</b>				
Maternal literacy rate below 85%	14.2	Maternal literacy rate above 85%	8.3	5.9*
Poverty rate below 60%	7.9	Poverty rate above 60%	15.4	-7.5*
Private school exists in town	7.7	No private school in town	16.7	-9.0*
<b>Day of observation</b>				
Monday	13.0	Other days	9.6	3.4*
Tuesday	5.6	Other days	11.7	-6.1*
Wednesday	9.0	Other days	11.0	-2.0
Thursday	13.2	Other days	9.9	3.3*
Friday	12.8	Other days	10.2	2.6
<b>Department:</b>				
Amazonas	14.4	Other departments	10.2	4.2
Ancash	17.8	Other departments	10.1	7.7*
Ayacucho	13.3	Other departments	10.2	3.1
Callao	11.9	Other departments	10.4	1.5
Huancavelica	17.6	Other departments	10.1	7.5*
Ica	9.4	Other departments	10.6	-1.2
Piura	10.4	Other departments	10.5	-0.1
San Martin	14.3	Other departments	10.1	4.2
Lima	7.0	Other departments	13.0	-6.0*
First round of survey	12.1	Second round of survey	8.8	3.3*

Note: \*significant at 5% level.

## References

- Alcázar, L., & Pollarolo, P. (2000). Alternativas para mejorar el sistema de bonificaciones a plazas docentes de zonas rurales y otras condiciones especiales. Lima, Peru: Ministry of Education, MECEP Working Paper No.5.
- Basu, K. (2006). Teacher truancy in India: The role of culture, norms and economic incentives. BREAD Working Paper No. 112.
- Chaudhury, N., Hammer, J., Kremer, M., Muralidharan, K., & Rogers, H. (2006). Missing in action: teacher and health workers absence in developing countries. *Journal of Economic Perspectives*, 20, 91–116.
- Cueto, S., & Alcázar, L. (2004). Informe final de análisis de datos de línea base. Plan piloto de bonificaciones especiales a docentes en zonas rurales. Lima, Peru: GRADE.
- Das, J., Dercon, S., Habyarimana, J., & Krishnan, P. (2005). Teacher shocks and student learning: Evidence from Zambia. Washington, DC. World Bank Policy Research Paper.
- Díaz, H., & Saavedra, J. (2002). Peru: Sobran regulaciones, faltan estímulos. In C. Navarro (Ed.), *¿Quiénes son los maestros? Carreras e incentivos docentes en América Latina* (pp. 143–211). Washington, DC: Interamerican Development Bank.
- Dixit, A. (1997). Power of incentives in public versus private organizations. *American Economic Review Papers and Proceedings*, 87(May), 378–382.
- Ehrenberg, R., Rees, D., & Ehrenberg, E. (1991). School district leave policies, teacher absenteeism and student achievement. *Journal of Human Resources*, 26(1), 72–105.
- Franco, L., Bennet, S., & Kanfer, R. (2002). Health sector reform and public sector health worker motivation: A conceptual framework. *Social Science and Medicine*, 54, 1255–1266.
- Glewe, P., Kremer, M., & Moulin, S. (1999). Textbooks and test scores: Evidence from a prospective evaluation in Kenya. Working Paper. Harvard University.
- Goddard, M., Mannion, R., & Smith, P. (2000). Enhancing performance in health care: Theoretical perspectives on agency and the role of information. *Health Economics*, 9, 95–107.
- Hoxby, C. (1994). Do private schools provide competition for public schools? *National Bureau of Economic Research Working Paper*: 34.
- Jimenez, E., & Sawada, Y. (1999). Do community-managed schools work? An evaluation of El Salvador's EDUCO Program. *World Bank Economic Review*, 13(3), 415–441.
- King, E., & Ozler, B. (2001). What's decentralization got to do with learning? Endogenous school quality and student performance in Nicaragua. *World Bank Policy Research Working Paper*. Washington DC: The World Bank.
- Montero, C., Oliart, P., Ames, P., Cabrera, Z., & Ucelli, F. (2001). La escuela rural: Modalidades y prioridades de intervención. Lima, Peru: MECEP Working Paper No. 2.
- Norton, M. S. (1998). Teacher absenteeism: A growing dilemma in education. *Contemporary Education*, 69(2), 95–99.
- PROBE Team. (1999). Public report on basic education in India. New Delhi: Oxford University Press.
- World Bank. (2003). World development report 2004: Making services work for poor people. Washington, DC: The World Bank.
- World Bank. (2004). Papua New Guinea: Public expenditure service delivery. Discussion draft. Washington, DC: World Bank.