

Chapter 3: Do Teachers Teach?

3.1 *Improving teacher quality and performance has been central to most educational reform efforts in the world.* A decade of research on learning outcomes confirms that teachers are the most important school-based input: a school with leaking roofs, no textbooks, and uninvolved parents can still produce good learning outcomes for students if the teacher is motivated and committed.

3.2 *A close look at teacher characteristics and compensation reveals dramatic differences between government and private schools:* A teacher in a public school is absent one-fifth of the time and has students that perform very poorly but still earns 5 times more than a teacher in a private school who is present nearly every day and has students that perform very well. One implication may be that the educational system would *benefit* if this government teacher were to stay at home, pocket 85 percent of his salary and use the other 15 percent to pay a teacher in the private sector to take his/her place. This chapter shows that such compensation schemes may still have benefits if used appropriately. The chapter analyzes why and how government and private compensation schemes are so different and suggest ways to build on the strengths of both to improve the overall quality of education.

3.3 *Comparing how the private and public sectors rewards teachers offers insight into what factors matter in the “production” of education.* In a healthy education marketplace private sector wages reflect productivity (more effective teachers are paid higher salaries) and outside opportunities (good teachers have multiple job opportunities). The report examines teacher demographic and educational characteristics in both sectors, incentives in the form of compensation policy and the system of monitoring, as well as the effect of these incentives on teacher effort as measured by absenteeism and student outcomes as measured by test scores.

3.4 The focus of the LEAPS survey on villages with both private and public schools is of particular value, since we are able to compare teacher demographic profiles, characteristics and compensation differences within the same village and can appropriately correct for geographical effects in the analysis.

3.5 *The data suggest that private and public schools exist in different and separate systems.* On most dimensions of interest—teacher profiles, competence, effort and rewards—a series of the public-private distinctions dominate the landscape:

- *Teacher selection and hiring practices differ.* The government sector hires teachers based on education and training qualifications. Contrary to views that richer villages or schools with richer children receive the best teachers, the data show government teachers are *equitably* distributed across villages and schools. The private sector hires primarily locally born and resident young women, most of whom do not have a post-secondary degree or formal teacher training.
- *Teachers in private schools are paid a fraction of the salary of public school teachers earn.* After controlling for observed differences, government teachers are paid between 3 and 4 *times* as much as their private counterparts. But the story is not just restricted to level differences in salary; the reward and penalty structure of teacher pay is radically different in the two sectors as well.
- *Government salaries are largely determined by experience, education and training.* Private sector compensation schemes are more complex—not only do they reward teachers for effort and performance, they also respond to the *outside opportunities* available to the teacher. Those who are likely to be paid higher in jobs outside the teaching sector get higher salaries
- *Once hired, accountability for teachers in government schools is limited.* Job retention is used to leverage teacher performance once they are hired, but teacher turnover is very low and most of it happens as a result of routine transfers, not firings for absenteeism. Turnover in the private sector is high and frequent—close to 25 percent of teachers are replaced every year. This frequent turnover may hurt the private sector, but it also allows constant replenishment of the teaching workforce and pruning of non-performing teachers.

3.6 *The government system rewards inputs and the private sector rewards performance.* The private sector responds to local conditions, the government sector does not. Combining these two systems presents an opportunity for public-private partnerships to enhance educational outcomes. There may be better solutions even under the current compensation scheme followed in government schools. A series of facts and findings based on special purpose data collected through the LEAPS project is used to frame the subsequent discussion.

Box 3.1: What we know about teachers

Studies on teacher performance in the United States and countries around the world systematically show that teachers matter.¹³ For most other schooling inputs (infrastructure, student-teacher ratios, direct funding to schools, provision of textbooks and others), careful empirical work finds little consistent evidence of a link with student achievement. In contrast, there are some teachers whose children learn systematically more; others whose children learn systematically less. However, while it has been easier to show that “teachers matter”, it has been very difficult to pinpoint *what it is* about teachers that matter—typically, experience matters only in the first year of teaching and qualifications and training have very little effect. These findings have led researchers to hypothesize that intrinsic motivation and aptitude for teaching are the most important determinants of teacher effectiveness.

The findings from the United States and other rich countries may or may not hold for countries like Pakistan. The problem is that because educational systems in the richer countries already ensure that only highly educated and trained teachers join the workforce and already have well-designed monitoring mechanisms to ensure that teachers show up for work, the differences between different teachers are small.

The differences among teachers qualifications and work ethic in Pakistan and South-Asia is generally large—there may be teachers with only secondary education and others with a masters degree; there are some teachers who don’t show up for work and some who are present every day.

The literature on teachers in South Asia is small. Kingdon and Teal (2005) compare teacher incentives and student outcomes in 30 private and government schools (172 teachers) in one Indian study. Murgai and Pritchett (2006) cite secondary data and use household survey data to look at teacher wages in both sectors, arriving at conclusions very similar to those presented here. In Pakistan, the work on teachers has typically been conducted in education departments. Recent “experiments” from India on the importance of teacher incentives and monitoring is discussed later in the report. However, while this strand of research has led to many interesting studies on teacher development and professionalism, there is no evidence to link teaching inputs and student outcomes in Pakistan.¹⁴

Part of the problem is data. Publicly available data sets exist on public schools such as provincial Educational Management Information Systems (EMIS) and one-off data sets on private education by the Federal Bureau of Statistics (FBS). But most research on education comes from household data sets (Pakistan Integrated Household Surveys conducted by the FBS) which have little usable information on teachers. Labor force surveys have not been exploited in any depth.

However, the lack of data has not hampered the introduction of “reforms” and changes in the teaching sector that have yet to be evaluated for their impact on student outcomes. Examples include creating a cadre of English language teachers, the introduction of contract teachers, and large-scale, province-wide teacher training programs conducted by the University of Education. Numerous smaller programs conducted by various NGOs and donor initiatives that have not been formally analyzed. Understanding how government teachers function, what reforms are necessary, and where to go from here requires a detailed study of the existing system of teaching linked to student outcomes.

¹³ See Hoxby (1996), Glewwe, Ilias and Kremer (2003), Vegas (2005) and references therein.

¹⁴ For an example of Aga Khan University’s work, see <http://www.aku.edu/ied/raps/policydialogue/dialoguekeyedu/discussionreports/report1/index.shtml>

I. FACTS AND FINDINGS

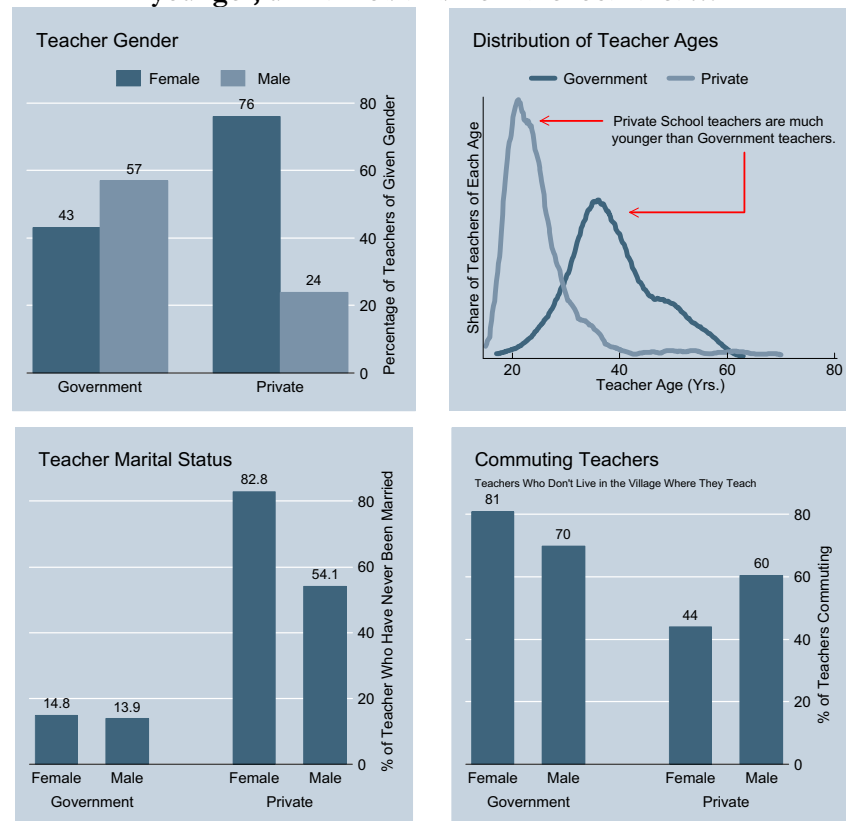
The geographic and demographic profiles of public and private teachers show that they are drawn from two completely different groups. On paper, the government sector is much better positioned to deliver quality education than the private sector, and in a highly equitable manner. Does it actually do so? And if not, what are we to learn from the relative performance differences in learning outcomes between the public and private sectors?

The overall demographic profile of teachers differs dramatically across the government and private sectors. Teachers in private schools are more likely to be female, younger, unmarried, and from the local area.

3.7 *Teachers in private schools are predominantly female, younger, unmarried, and from the local area.*

Figure 3.1 summarizes the dramatic differences in the demographic profiles of teachers in the government and private sector. The top left corner shows that the gender distribution of teachers—76 percent of private school teachers are female compared to only 43 percent in the government sector. And the teachers in private schools are a lot younger. The figure on the top right corner shows that the age distribution among private school teachers is highly concentrated around 21, while the age distribution of government school teachers is more dispersed with an average close to 40.

Figure 3.1: Private school teachers are predominantly female, younger, unmarried and from the local area...

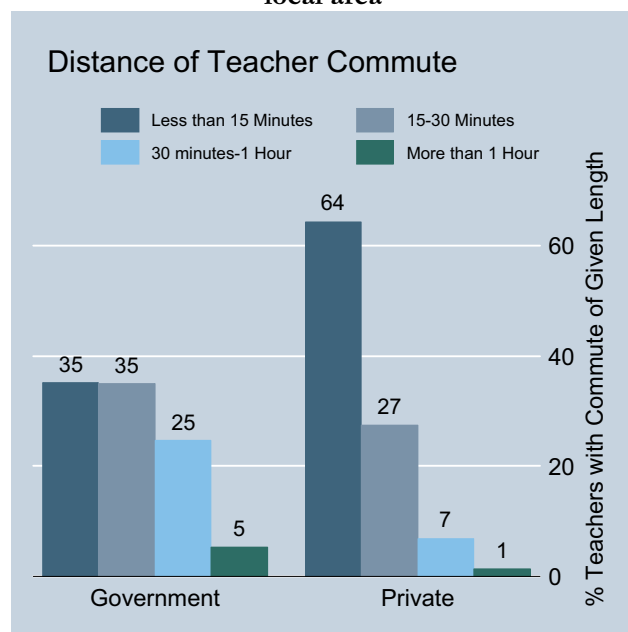


3.8 As a consequence of the younger age profile, most teachers in private schools, especially women, are unmarried (bottom left). Furthermore, in the private sector there is a large difference in the percentage of unmarried female versus male teachers (83 percent vs. 54 percent), but in the government sector there is none (both are just below 15 percent).

Box 3.2: What data are required for this first look at the teaching sector?

The LEAPS project developed questionnaires to collect detailed information on teachers in the sample schools. The survey results provide a unique, detailed look at teacher profiles, competence, effort and reward structures in Punjab. The teacher roster questionnaire collected basic information on salary, education, training, experience and basic demographic information on every single teacher in the sample schools. This gives us data on 4,878 teachers, of which 4,825 are in government and private schools and 2,826 are female.¹⁵ This teacher roster captures the maximum breadth and diversity of the teacher information across government and private schools, as well as rich and poor villages.

Figure 3.2: Private school teachers live in the local area



3.9 The detailed teacher questionnaire was administered to the class teacher of the grade tested in the LEAPS project (typically one teacher per school) and provides more extensive information than the roster—for example these teachers were administered tests as well. The teacher data is linked with student test scores on specially designed tests for Class III children and to the socioeconomic profiles of the children in the classrooms.

3.10 *Government and private school teachers differ in where they come from and how far they travel to work.* According to data on the teacher’s village of birth and their current residence, a greater fraction of

both females and males in private schools (56 and 40 percent, respectively) were born in the village where they currently work than in government schools (19 and 30 percent for females and males, respectively) (Figure 3.1, bottom right). Private school teachers who may not have been born in the village appear to frequently become part of the local community. Figure 3.2 looks how far teachers live from the school they

¹⁵ 51 (< 2%) are in NGO schools. They are excluded from the discussion.

teach in—65 percent of private school teachers live within 15 minutes of the school while only 36 percent of the government school teachers do so.

3.11 *Both measures of “local hiring” (village of birth and current residence), increase dramatically with village literacy.* The percentage of local teachers by place of birth increases from 28 percent for the least literate villages to 48 percent for the most literate. The difference is even larger if we look only at private schools: 39 percent of teachers are of local origin in the least literate villages while 66 percent are of local origin in the most literate village. The same pattern also emerges when we look at the distance traveled to school by teachers. The percentage of teachers who live within 15 minutes of the school increases from 38 to 60 percent moving from the least to the most literate villages.

3.12 *In summary the use of local teachers in private schools increases dramatically as the supply in the village—measured through village literacy—increases.* The average teacher in a private school is a young, unmarried female teacher who is very likely born in the village where she is teaching and lives close to school. Teachers in government schools are older, married males who were neither born locally nor live locally. Furthermore, for private schools, the use of locally resident teachers increases dramatically as the supply in the village—measured through village literacy—increases; there is some evidence of an increase in government schools as well, but the difference is smaller.

On the basis of observed characteristics, government school teachers look much better qualified. They are more educated, better trained, and have more experience. They are also paid a lot more than their counterparts in the private sector.

3.13 *Government teachers are more educated.* The government sector follows a strict and consistent hiring policy for teachers. A large fraction of government teachers is highly educated—19 percent have a master’s degree (MA) and another 26 percent hold a bachelor’s degree (BA). In contrast, only 4 percent of private school teachers hold a master’s degree, and 19 percent report a bachelor’s degree (Figure 3.3, top left). The male-female differential in educational attainment in the government sector is also less pronounced than that in the private sector: 38 percent of female teachers hold at least a BA compared to 51 percent for male teachers; the equivalent numbers for the private sector are 17 and 39 percent.

3.14 *The differences in education within the government sector stem largely from different age cohorts.* Over time, the educational qualifications required for joining the government teaching cadre has increased, so that younger and newly hired teachers are more educated—in the latest wave of teachers hired on a contractual basis, more than 93 percent reported a bachelor’s or higher degree. The lowest educated teachers in the government

sector are usually the oldest—matriculates for instance, report a median age of 40 compared to 35 years for those with a bachelor’s degree.

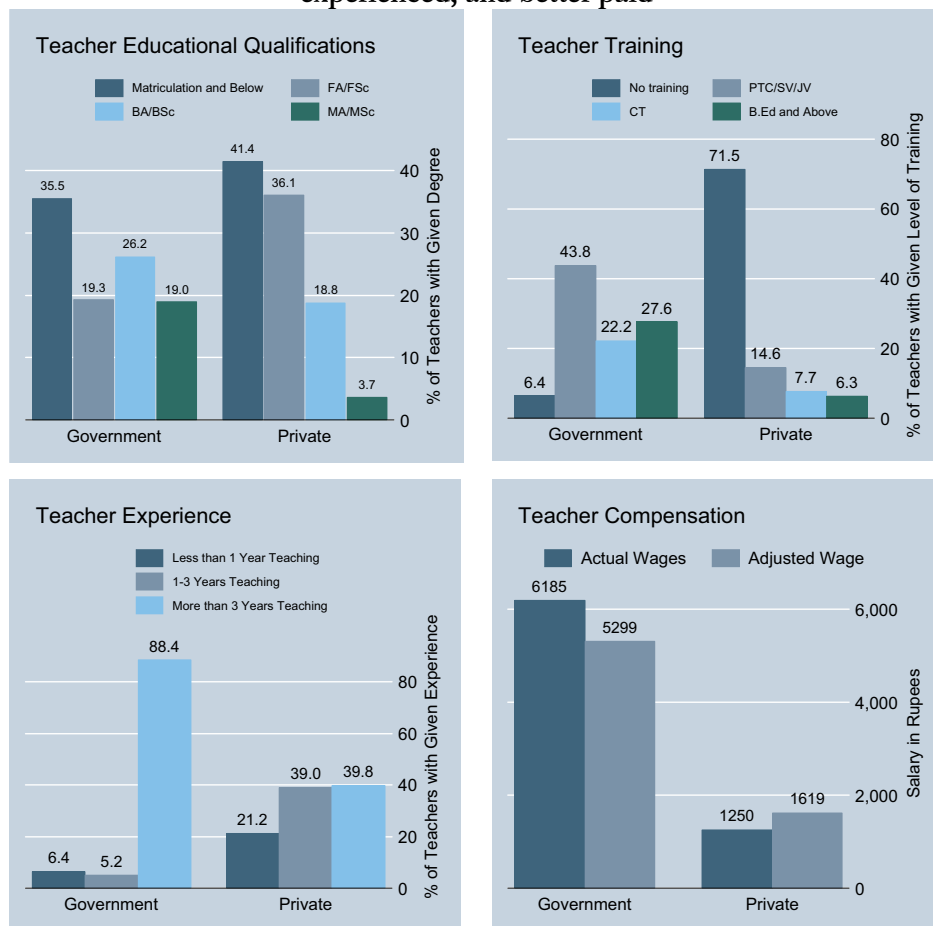
3.15 *The private school age-education profile is quite different with age and educational outcomes positively correlated.* The median age of a matriculate is 22 years and for more advanced degrees, age increases from 23 years for completed secondary schooling (FA) to 25 years for a bachelor’s and 29 for a master’s degree.

3.16 *Government teachers are better trained.* Teacher training is a government requirement; only 6 percent of government teachers report “no training”. The bulk (43 percent) holds a Primary Teaching Certificate

(PTC) while the remaining 50 percent are divided between CT (that typically goes with FA) and the higher-level Bachelor of Education degree. More than one-fifth of all government teachers in our sample report a Bachelor of Education or higher degree. Educational attainment among private school teachers varies widely; more than 70 percent report no training at all and only 14 percent report a Bachelor of Education or higher degree (Figure 3.3, top left).

3.17 *Government teachers are more experienced.* Not surprisingly given the older age profile of government teachers, 88 percent report three or more years of total teaching experience, with no difference in experience profiles between men and women.¹⁶ The situation in private schools is quite the opposite: 21 percent were in

Figure 3.3: Government teachers are more educated, better trained, more experienced, and better paid

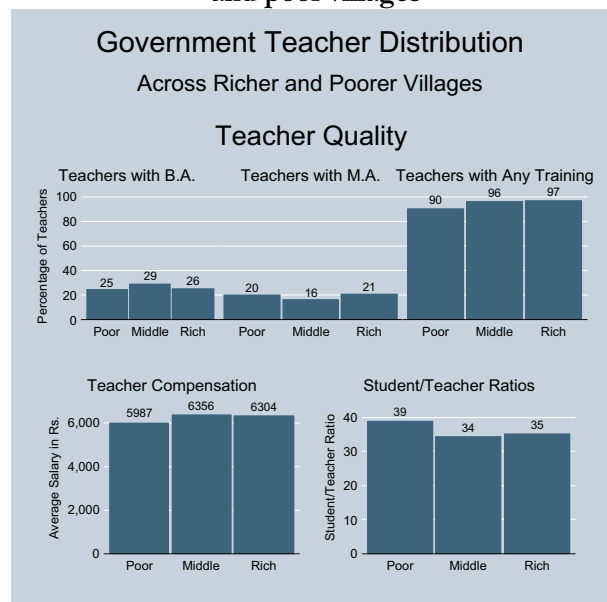


¹⁶ Our question on experience was categorical with three categories--<1 year of experience, 1-3 years of experience and >3 years of experience.

their first-year of teaching ever and only 40 percent report three or more years of experience in the teaching sector. Furthermore, women are generally less experienced than men—42 percent of the teachers who are female report 1-3 years of experience compared to 21 percent of men.

3.18 *Government teachers are better paid.* Finally, government school teachers are much better paid. The

Figure 3.4: Teacher education, training, wages and student-teacher ratios are very similar in rich and poor villages



bottom right corner of Figure 3.3 plots average wages of government and private school teachers. To control for the objection of comparing apples and oranges—government teachers are paid more simply because they are more educated and better trained—salaries in the public and private sector were regressed on teacher characteristics to control for potential differences in education, qualification, and age. The figure shows both the unadjusted wages, which is just the average in the two sectors, and the “adjusted” wages, which are wages in the two sectors controlling for observed characteristics. It is immediately clear that private teachers earn a lot less than their government counterparts. The unadjusted wages in the private sector of Rs.1250 a

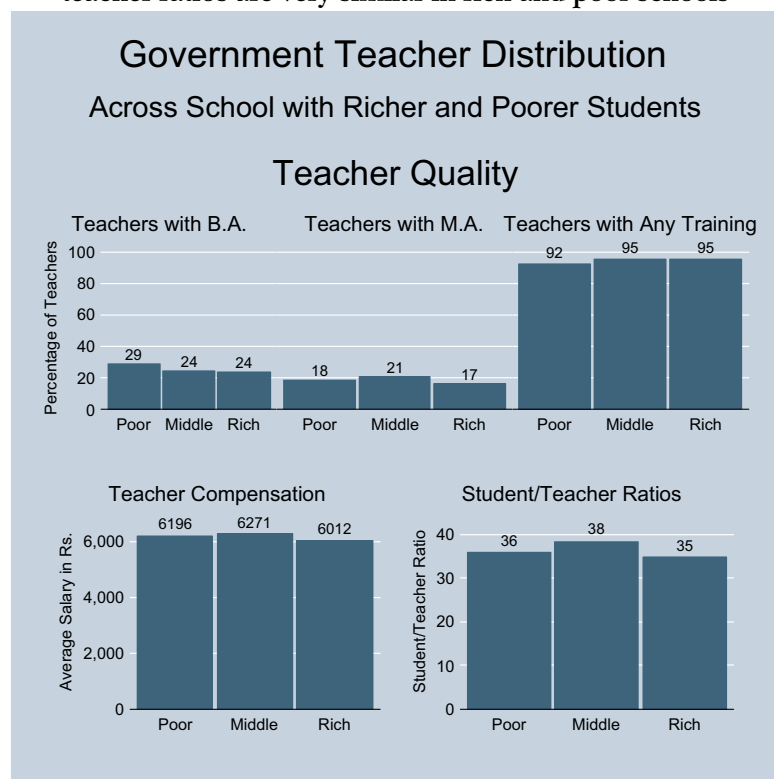
month are almost 5 times less than the government sector wage of Rs.6185. Although some of this difference can be attributed to differences in teacher profiles, controlling for these differences (but retaining the assumption that compensation *schemes* are the same in both sectors) makes little difference—teachers with identical profiles are paid 3-4 times as much in the government compared to the private sector. In particular, a 25 year-old female with a bachelor’s degree, 1-3 years of experience, and a 2-year teacher training course residing locally (thus controlling for age, gender, education, experience, training and residence) would earn Rs.5299 in the public sector, but only Rs.1619 in the private sector.¹⁷

¹⁷ The adjusted wages assumes that returns to characteristics are identical in the public and private sector. We return to this technical issue below.

Government teachers are evenly distributed across poor and rich villages and poor and rich schools

3.19 *There is no systematic difference in the placement of government teachers in villages of different socioeconomic levels. A political economy story, oft-repeated in the Pakistan case, suggests that less-educated teachers are placed*

Figure 3.5: Teacher education, training, wages and student-teacher ratios are very similar in rich and poor schools



systematically in poorer villages that have less influence in provincial education departments. Even within villages, it could be that schools with richer children have more “bargaining” power and hence get the best teachers.

3.20 Figure 3.4 shows there is little evidence that better teachers are allocated to richer villages or schools, at least on the basis of observed qualifications. Figure 3.4 uses the LEAPS population census of all villages in the sample to classify villages as rich, middle, or poor in terms of household wealth—the same classification used to look at

enrollment in the introduction and the chapter on learning. The top panel of the figure looks at teacher education and training in these three types of villages; it shows the proportion of teachers in the public sector who hold a bachelor’s degree, a master’s degree, and who report some training. The bottom panel looks at teacher wages and student-teacher ratios—the latter because it could be that the government allocates fewer teachers to poorer villages. Figure 3.5 replicates the top and bottom panels of Figure 3.4, using school instead of village wealth—the school wealth measures are derived from the asset index of 10 randomly selected students in Class III of every school.

3.21 Both figures show that, at least in the Pakistani context, village and school wealth are not correlated with teacher education levels, teacher training, teachers’ wages or student-teacher ratios. Neither are they correlated with teachers’ wages or student-teacher ratios. Disaggregating teachers by gender or looking at variation in education within each sector does not change these results. Although these data are only for the sample of villages with a private school and therefore do not say much about smaller villages, there is

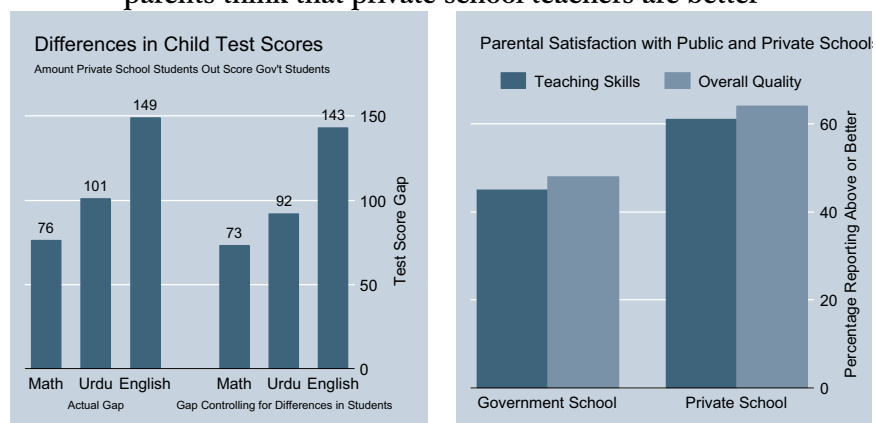
currently little evidence that more educated or better-trained government school teachers are sent to wealthier villages or schools.

3.22 On paper, the government sector looks much better positioned to deliver quality education than the private sector, and in a highly equitable manner. Government schools are staffed by well-educated and trained teachers, with lots of experience; the government also ensures an equitable distribution of teachers across villages and schools. In contrast, the private sector looks quite bad—teachers are inexperienced, less-educated, and almost without exception, have little teacher training. They are also paid less, and turnover is frequent. Schools must constantly recruit new teachers. The inputs approach to education would argue that the government sector is doing everything right and the private sector is, in comparison, is doing less well and has severe staffing issues.

3.23 *But private schools are significantly outperforming government schools.* Inputs are important in that they are the instruments through which preferred outcomes are achieved, but ultimately it is the outcomes that matter, and here the *private sector* is doing much better. Figure 3.6 reproduces the learning gaps across public and private schools from the learning chapter, and also includes measures of parental satisfaction with teachers in government and private schools.¹⁸

3.24 As the figure *shows*, private schools are significantly outperforming government schools and that very little of this difference is attributable to differences in household wealth, parental education, the child’s age or the child’s gender. Furthermore, parents rate

Figure 3.6: Learning outcomes are far better in private schools, and parents think that private school teachers are better



government schools far below private schools—on average, only 45 percent thought that the teaching skills of government school teachers was above average or excellent. Parental satisfaction with private schools is significantly higher at 60 percent. When asked about the overall quality of the teacher, the results were similar.

¹⁸ To look at parental satisfaction with different types of schools, in the accompanying household survey parents were asked to report their levels of satisfaction with different types of schools in their village. In particular, we asked parents to tell us what they thought of the teaching skills of their children’s teacher as well as the overall quality of the school. The figure shows the fraction reporting that teaching skills and overall quality were “above average” or “excellent”.

3.25 *In terms of the education production function, one needs to account for teacher “effort” in addition to teacher “type” and compensation.* If test scores are worse in government schools and parents are less satisfied, what accounts for this? When asked for more detailed views parents do not fault government teachers for low education or poor qualifications; rather they say that their children’s government teachers are not “motivated”, do not “care about the children” or are “almost never there”. It may be that teacher effort matters as much, if not more, than teacher competence in the production of learning. In addition, we also need to think about teacher compensation: Given that effort is an important component of teacher quality, do we find differences in how public and private schools reward effort monetarily? Towards such an analysis, the last part of this section provides a detailed decomposition of government and private teacher salaries, and in particular the relative contribution of different teacher attributes in the compensation package.

Government teachers exert less effort than their private counterparts. The differences get larger as teachers become more experienced and for women who live farther from the school.


3.26 To measure effort, we recorded the number of days absent in the last one month for each teacher as reported by the head-teacher.¹⁹ In addition, for 800 detailed teacher interviews, teachers were asked to rate themselves on absenteeism. This was further broken down into absenteeism arising from emergencies, personal reasons, or official business. These results almost surely underestimate the extent of “true” absenteeism in the system, and it is very likely that they underplay the difference between the government and private sectors. Furthermore, government head-teachers may have had reasons to believe that high absenteeism recorded in the survey could result in some kind of official backlash (although all survey results are stripped of identifiers and teachers were informed that all responses were anonymous); private head-teachers do not face this incentive to underreport.

3.27 *Absenteeism is considerably higher in government schools than in private schools.* In government schools the absentee rate is 3.2 days per month vs. 1.8 days per month for private schools (this translates to 15 and 8 percent rates of absenteeism, respectively). It’s possible the high degree of teacher accountability in the private sector accounts for this difference.

3.28 *Absence rates for more versus less experienced teachers.* There is no difference in absenteeism between public and private teachers (1.9 days a month) with less than one year of experience. As shown in Figure 3.7,

¹⁹ Effort is hard to measure in large-scale surveys without detailed classroom observation of teacher’s going about their daily routine. “A plausible indicator of effort is teacher absenteeism (see for instance, recent work by Chaudhury and Dilip (2006) for an analysis of absenteeism in India and Ghuman and Lloyd 2007, for absenteeism in 12 villages in NWFP and Punjab).” It’s likely that teachers who are absent from class are less effective. Previous studies report teacher absenteeism using an audit approach; that is, by arriving unannounced at the school and taking a roll-call of all present teachers. Since we needed to interview teachers and they needed to be present at time of testing we could not rely on random checks, and used head-teachers’ reports of teacher absenteeism as the primary measure. Das, Dercon, Habyarimana, and Krishnan (2005) discuss the different measures and their relative merits.

however, the story is different for more experienced teachers. Government school teachers with more than three years of experience are absent 3.4 days a month while teacher absenteeism in private schools remains unchanged for those who are more experienced.



Box 3.3: Doesn't the government already have a monitoring system in place?

The government does have an elaborate system of monitoring and management in place at the district level, with District Education Officers aided by deputies and assistants. The schools report that they are visited regularly by the district education staff; in fact, 66 percent of all schools were visited by a school inspector in the last three months and if anything poorer villages were visited more often by the school inspectors than richer villages. There is some weak evidence that schools that are visited more have lower absenteeism but that is not robust to the definition of the time period, and runs into complicated issues of whether the visits *lead* to lower absenteeism, or whether inspectors just choose to visit schools where absenteeism is lower to begin with.

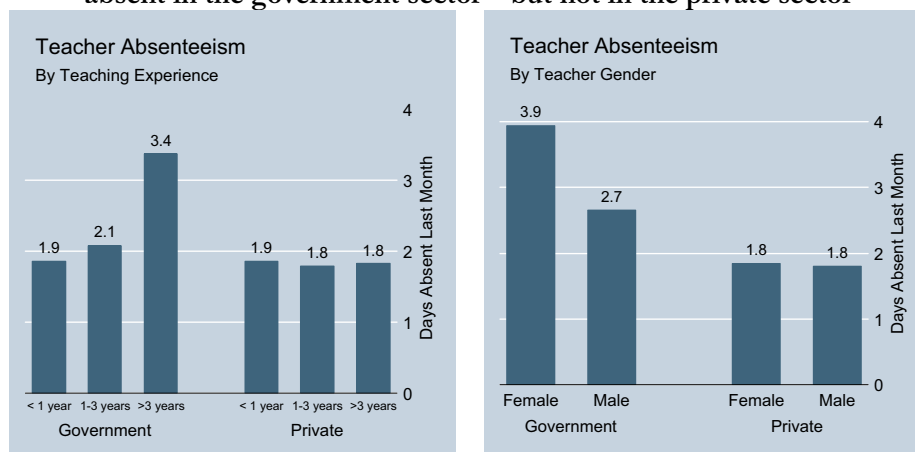
| | Percentage of Schools | Mean Number of Monthly Absences |
|------------------------|--------------------------|------------------------------------|
| 0-1 Month Ago | 43.20 | 2.49 |
| 2-3 Months Ago | 23.12 | 2.94 |
| 4-6 Months Ago | 11.56 | 2.68 |
| 7-12 Months Ago | 9.53 | 3.70 |
| > 1 Year Ago | 11.97 | 2.22 |
| Never | 0.61 | 1.67 |

3.29 *Absenteeism differentials between females and males.* As Figure 3.7 shows, females are absent 3.9 days a month in the government sector compared to 2.7 days for males. Again, there is no difference in absenteeism between men and women in private schools (1.82 days a month on average). In the Pakistani environment where females cannot move about freely and transportation woes are frequent, the literature has often cited transport problems and other responsibilities in the household as contributing to the increased absenteeism of female teachers. If this is the case teachers who live further from work should have higher absenteeism rates and these problems should affect the government sector more, since only one-third of female teachers in government schools live within 15 minutes of the school, compared to 66 percent of those in the private sector. In fact, female teachers in government schools who live more than half-an-hour away from home are absent 43 percent more (3.67 days vs. 2.56 days) than female teachers in government schools who live less than 15 minutes away.²⁰ All these results also hold in a multiple regression framework after controlling for teacher education, training, gender, experience, village origin, school type, and village fixed effects.

²⁰ The distance to school variable is from the teacher questionnaire so has a smaller sample size.

3.30 *Absenteeism rates may be much higher in the government sector because of additional responsibilities.* Part of this higher absenteeism clearly has to do with accountability issues in the government sector, but part of it may also be due to the non-teaching duties that government school teachers are often asked to undertake. Only 3 percent of private school teachers were absent for work-related reasons in the last

Figure 3.7: Female teachers and more experience teachers are more absent in the government sector—but not in the private sector



month, compared to 26 percent in the government sector. While accountability is a serious issue in the government sector, officially sanctioned absenteeism from class is equally serious from the students’ point of view.



Box 3.4: Additional Responsibilities for Government Teachers

One big problem is the extra responsibilities that government teachers face over and above their regular teaching duties. I came across the following example in our field-work. When I went to a Government Primary School in one of our sample mauza (village) there was only one teacher present. When I spoke with him, he told me that there are only two teachers in the school and the other one had been called by the Deputy District Educational Officer (DEO). The teacher complained that there is lot of extra work given to them by the government. Sometimes it is a meeting in the EDO’s office, sometimes the Deputy DEO calls them, sometime they are on election duty, others on examinations duty and sometimes even on surveys conducted by the government.

“Now tell me, how can I teach the whole school? I wrote to the government saying that there we need more teachers but there was no reply. I tried to talk to the LC and AEO, but they said that I had given the written application and I should now wait because government work cannot be done quickly. Now you tell me—already the two teachers are not enough and with all these extra responsibilities we cannot give proper attention to the children. You have to ask the Government that to give us one more teacher and if they can’t give us a teacher then they should not give us extra responsibilities. Only then we can give proper attention to the school or the children.”

Source: Kashif

II. GOVERNMENT AND PRIVATE SECTOR COMPENSATION: INPUTS OR OUTCOMES?

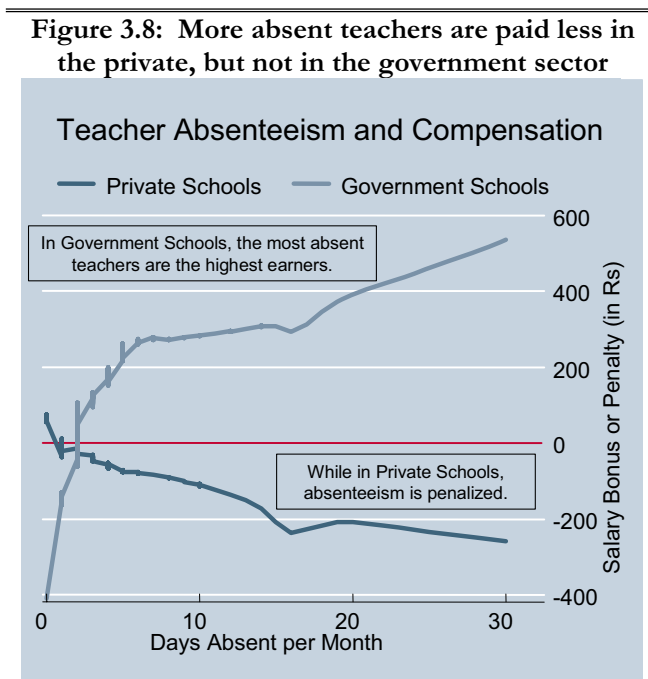
3.31 *Four pieces of data have been brought together for the first time in the LEAPS survey to examine teacher performance and its relationship to compensation in public and private schools.* Student test-scores, teacher absenteeism, teacher test-scores and teacher’s salaries in the public and private sector can be *linked*: to show, for instance, whether there is a correlation between student test scores and teacher salaries or absenteeism and teacher salaries and if so, whether this correlation differs between the public and private sectors. We highlight each of these four correlations next and then discuss the overall compensation schemes in the two sectors.

Salaries for government sector teachers do not vary with effort or outcomes. In the private sector, they do.

3.32 Figure 3.8 shows the deviation from average salary for teachers based on absenteeism in public and private schools. As absenteeism increases in the private sector, salary goes down—teachers with low absenteeism earn more (close to Rs.100 above the average salary) while those with high absenteeism earn less. This relationship is reversed in the government sector, where those with low absenteeism report salaries Rs.400 below the mean in their sector, and those with the highest absences receive salaries Rs.600 above the mean.

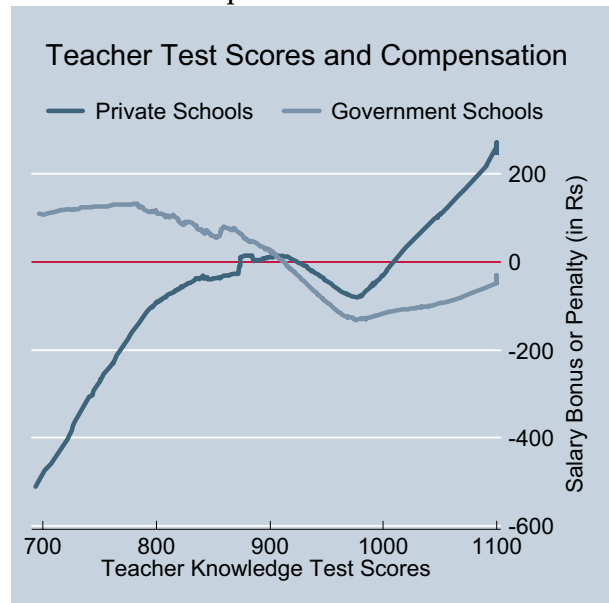
3.33 *Older teachers are absent more and they are also paid the most.* These results hold in a multivariate

regression controlling for the age, gender, education, training and residence of the teacher, as well as the geographical location of the village (village fixed effects). In private schools, a teacher who is absent 5 days a month is paid 5 percent less, in government schools a teacher is paid 3 percent more! One potential explanation for these results may be that the teachers with higher absenteeism in the government sector may hold more “senior posts” such as a head or acting head. Higher posts carry higher salary terms, and these may also be the teachers who tend to be more absent, whether because of official duties or other reasons.



3.34 The LEAPS project tested Class III teachers on the curriculum they are supposed to teach in Mathematics, English, and Urdu. Figure 3.9 shows the relationship between teacher test scores and salaries. As in the previous figure, the vertical axis represents deviations from the average salary in the sector; the horizontal axis in this case represents the percentage of questions the teacher answered correctly on the test. As before, better scores on the test for private school teachers were associated with higher salaries—a teacher who scored 60 percent on the test receives Rs.600 less than the private sector mean, while a teacher scoring 95 percent receives Rs.200 more than the mean. In the government

Figure 3.9: Higher scoring teachers earn more in private schools



sector, teachers who scored 60 percent received Rs.200 more than the mean. The only saving grace is that teachers who scored highly were not penalized as much as in the absenteeism figure, reporting salaries only Rs.100 below the mean. Taken together, these data imply that the least competent teacher in the government sector earns the same salary as the most competent teacher in the private sector.

3.35 Again, the results hold in a multivariate regression context, albeit with a few differences in functional form. Across the test-score range, a private school teacher in the top 20 percent reports a salary that is 28 percent higher than one in the bottom 20 percent. However, private schools are particularly responsive to poor and exceptional teacher test scores, with little difference in compensation for average teachers. Moving from the third to the fourth quintile of test scores does not increase salary, but moving from the first to the second quintile of test scores increases salaries by 8 percent and from the fourth to the fifth quintile by 9 percent. In the government sector, the relationship between test scores and compensation is generally weak and somewhat supportive of the representation in Figure 3.9 above.

3.36 Figure 3.10 presents a third association, in this case between student and teacher test scores. As before, the vertical axis is deviation from average salary in the sector. The horizontal axis is the average test score of the students taught by the teacher. In the private sector, teachers of students with higher test scores are paid more. In the government sector, there is no relationship between student scores and teacher compensation; at worst, those at the bottom of the distribution are paid somewhat more.

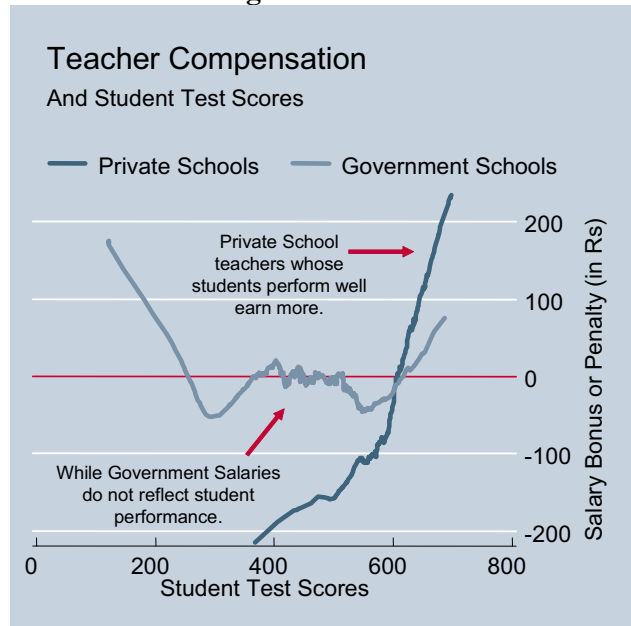
3.37 These three figures highlight what is already fairly well known about government compensation schemes—that they reward

experience and education in teachers (see for instance, Vegas (2005) for a discussion of Latin America or Kingdon, Geeta and Teal (2004), and Murgai and Pritchett (2006) for India). It also adds new information about compensation in the private sector. For teachers in private schools, effort (as measured through lower absenteeism), competence (as measured through their own test-scores), and student achievement (as measured through children’s test-scores) are all rewarded with higher salaries. Thus, although the government system of education provides teachers who are more experienced, more educated and better trained, it seems the lack of accountability and mechanisms for rewarding better performers may lead to lower effort. Compensation schemes in the private sector seem to reward competence and effort; in the government sector, better performers can actually end up receiving *lower* salaries. This hints at the next and final step, which looks at the overall compensation schemes in the two sectors and a discussion on how to structure a debate about teacher recruitment, deployment, and compensation.

The government system rewards teachers differently from the private sector.

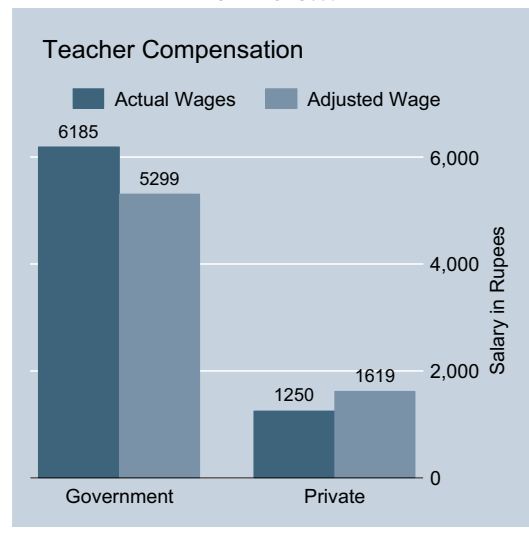
3.38 *On average, government teachers are paid five times as much as their private sector counterparts.* This finding echoing findings from many other countries. To re-emphasize the point, we reproduce the unadjusted and adjusted salaries of government and private school teachers, where the adjusted salaries control for education, experience, gender, qualifications, and training. The adjusted salary gap is somewhat smaller, but still represents a three-fold advantage for the government sector.

Figure 3.10: Teachers whose children perform better earn higher salaries in the private, but not in the government sector



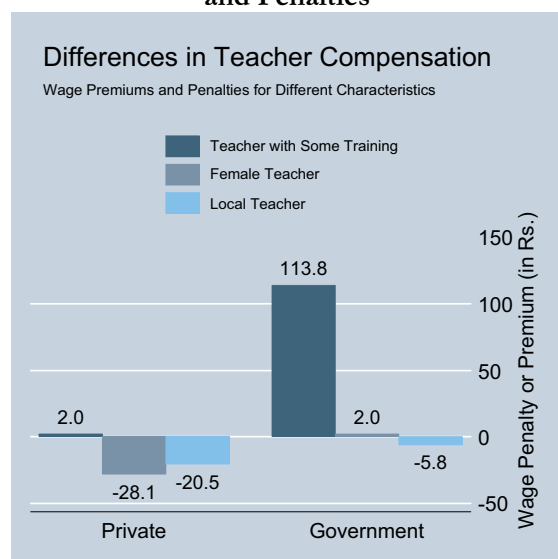
3.39 One problem is the adjusted wage calculation in the two sectors assumes that the government and private sectors reward the same teacher characteristics in the same way. That is, a teacher with training receives the same additional wage in the government sector as she does in the private sector. In fact, as the relationship between effort and wages suggests, the compensation function in the two sectors looks quite different. To examine how the different sectors reward different characteristics, we regress (log) wages on teacher characteristics separately for public and private schools. Several noteworthy contrasts are summarized in Figure 3.12.

Figure 3.11: Government teachers earn a lot more...



3.40 *Salaries in the government sector are largely determined by experience, training and education.* In the private sector, education matters, but the premium to experience and teacher training is much smaller. For example, in government schools a 50 year-old teacher earns 70 percent more than a 25 year-old; in the private sector, the premium decreases dramatically to only 20 percent. The rewards to teacher training are equally dramatic. In the government sector, the minimum level of teacher training (PTC) increases salaries by 88 percent, while in the private sector, such a teacher would earn only 7 percent more than one without any training. In contrast, education matters equally in both sectors, and perhaps even somewhat more in private schools.

Figure 3.12: Public/Private Wage Premiums and Penalties

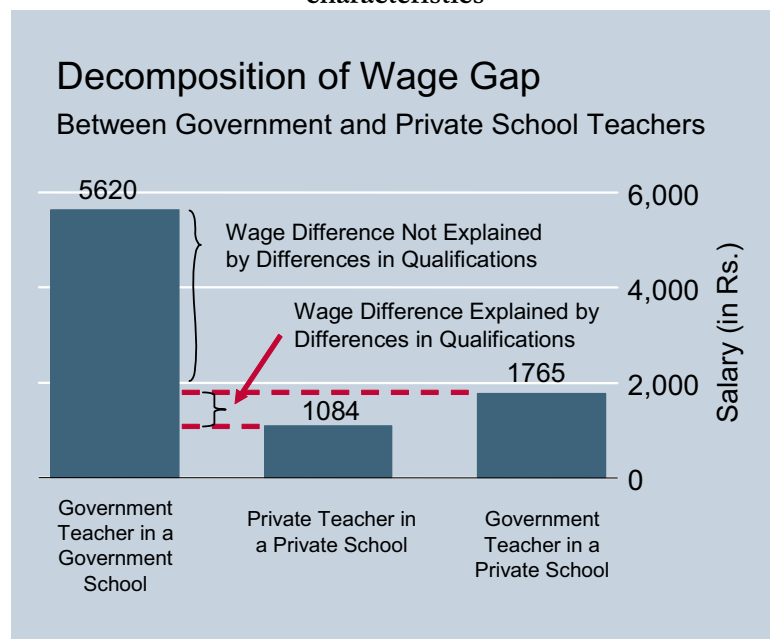


3.41 *Private schools pay their teachers according to how much they could earn elsewhere while the government sector makes no adjustment for alternative employment opportunities.* As a result, private schools pay women and local teachers considerably less. Females in government schools actually earn a little more than men (3 percent) while in private schools they earn 36 percent less. In general, employment opportunities for women are limited and because it is difficult for them to travel outside the village they live in, they have fewer outside opportunities and they are paid less in the private sector. Local teachers are actually paid less under both systems, but the difference is much larger in private schools—the penalty is 5 percent in

government compared to 24 percent in private schools. Again, residence in the village means that travel costs are lower and the teacher (most of whom are women) enjoys the safety and convenience of working where she lives. She is willing to accept a lower salary than a teacher who has to commute from a neighboring village.

3.42 Given these differences in how the two sectors reward teachers, the pay differential between the teachers in the government and private sectors becomes clearer. Figure 3.13 illustrates the compensation outcome of moving a teacher with certain characteristics from the public sector and to the private sector by using the estimated coefficients from Column 1 in Table 5. The figure plots the average pay of a teacher in the public sector (the first bar), a teacher in the private sector (the second bar) and a teacher in the private sector if he/she had the same characteristics as teachers in the public sector. The difference between the first and the third bar is the difference in salaries arising from differential returns in the two sectors; the difference between the second and the third bar is the difference due to characteristics.

Figure 3.13: Very little of the wage difference between government and private schools is because of differences in characteristics



3.43 *A teacher's salary would decrease dramatically if she were to move from the public sector to the private sector. The average salary for the public sector teacher falls from Rs.5620 to Rs.1765 for three reasons: the private sector does not value teacher training (which the public sector does), it does not compensate experience to the same level as the public sector, and it pays female teachers a lot less. Only the remaining difference between the salary that average public school teacher would receive and the average salary in the private sector, Rs.1084 vs. Rs.1765, comes from the fact the*

average public school teacher is better trained and educated than the average private school teacher.

3.44 *These facts suggest that the government sector cares more about observed teacher inputs, such as education and training, whereas the private sector cares more about teacher effort and student outcomes. Private sector teachers are paid according to local job market conditions—those with better options are paid more. The labor market for government*

teachers responds to different signals, particularly the need to reward everyone equally depending on education, qualifications and training, but little else. The flexibility to adjust wages depending on local conditions or teacher effort in the private sector is absent from government sector compensation schemes. We are not saying *all* government teachers are “bad” and *all* private school teachers are “good”. As the chapter on learning pointed out, the top government and private schools perform at the same level. The problem is the bottom 20 percent of government schools where little to no learning goes on at all. Part of the problem is that government compensation schemes do not distinguish between good and bad teachers. In fact, compensation when linked to experience only results in more absenteeism, less-educated teachers (recall that older teachers are also less educated), and poorer learning outcomes for students.

III. DISCUSSION

3.45 The government sector works well in some regards, very poorly in others. It hires educated and well-trained teachers and pays them well. It also allocates them fairly across both rich and poor villages and schools with rich and poor students. On the other hand, it has no mechanism for penalizing non-performing teachers and rewarding exceptional ones. The current mechanistic compensation scheme results in the highest compensation being directed towards the worst teachers, in terms of education, training, or effort. Teachers are also burdened with duties outside the purview of their main responsibilities.

3.46 The private sector compensates teachers for outcomes, and high turnover permits retention based on merit, but private sector schools locate only in areas where teachers are available at a low wage. It is exceedingly difficult for private schools to arise in areas without educated women or in the rural areas with secondary schools, where further education is required. Teachers receive wages according to their available local opportunities—they are paid less in villages where there is higher literacy (and therefore greater supply), and females with these characteristics earn the least.

3.47 Overall some private sector characteristics may be “desirable” in government compensation schemes; others, such as gender discrimination in wages clearly violate government rules and may be “undesirable.” Suggestions for how can Pakistani can best take advantage of these two very different sectors and compensation schemes requires either rethinking the stage of education and the geographical locations the government sector should focus on or a large, systematic reform of the government compensation system.

Rethinking teacher recruitment, deployment, and rewards

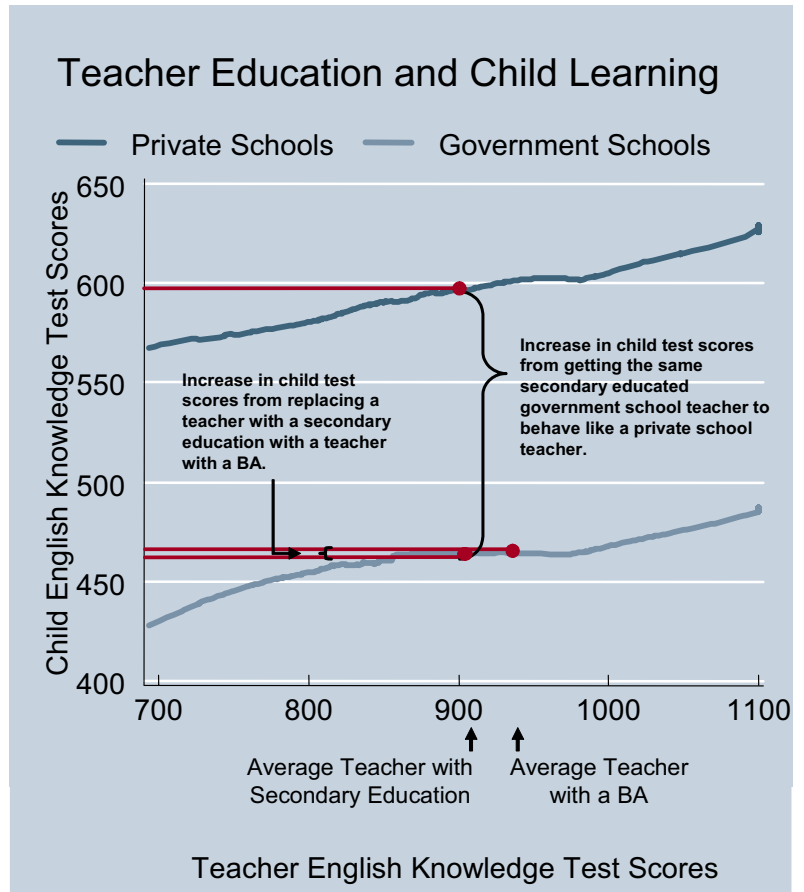
3.48 The debate around teachers in government schools seems to hinge on two related issues: the attributes of teachers and the institutional framework that contribute to better student outcomes, and the availability of teachers or schools catering to different levels of education in each village (primary, middle, and secondary). Teacher and institutional attributes can be broadly separated into three categories: *hard to observe teacher characteristics* such as motivation, which can emerge only over time, *easy to observe* characteristics such as educational qualifications, experience and training and, the institutional framework embodied in *incentives* such as the teacher salaries and bonuses. Research in the United States has tried to separate the influence of the first two types of characteristics (motivation and qualification); given that most of this research is for public school teachers, it has made less progress on the impact of incentives. This research finds that characteristics like motivation and a love of teaching are *far* more important in explaining the variation in student learning compared to educational qualifications, experience, and training. Experience for instance, matters only in the first year. In short, in systems with the same set of incentives, teachers appear to be *born*, not made.

3.49 When there are many potential teachers to hire from, it makes sense to try and recruit and retain the best applicants and eventually fire those who do not perform. However, in geographical areas or levels of schooling where potential applicants are few, this is no longer true. Firing a teacher makes sense only if you can replace him/her with another teacher who is better. In areas of limited supply, a teacher who is absent three days a week may still be a good hire compared to the alternative of being teacher-less. The key point is that these different factors *interact*—providing incentives for teachers mean that those with higher motivation (and thus better outcomes) are more likely to apply, thus increasing the quality of the teacher pool. In fact, in the United States studies have argued that the quality of the teacher pool has suffered because of teacher unionization, which pays a fixed wage regardless of the motivation of the teacher (see Hoxby, 1996). Some options and their potential interactions in terms of student outcomes are discussed next.

An example: The popular wisdom that “increasing the educational qualifications and training of new entrants is a must” could lead to *worse* educational outcomes

3.50 This proposed policy option assumes *easy to observe* teacher characteristics drive student learning. Do they? Figure 3.14 plots the English test scores (results are very similar for Mathematics and Urdu) of children against the English test score of their teacher. The red line shows the relevant relationship for public schools and the blue line for private schools. Finally, the two red dots show the test scores of teachers with a secondary education versus those with a bachelor’s degree—the teachers with secondary education scored 80 percent on the test compared to 90 percent for the latter.

Figure 3.14: At the primary level, its teacher effort that matters, not teacher education



3.51 The small gap on the vertical axis suggests that hiring a teacher with a bachelor’s degree instead of secondary education in the public sector results in a gain of roughly 1-2 percentage points on student test-scores. Contrast this with the dramatic difference of 19 percentage points between teachers with secondary education in the public versus the private sector. The figure suggests that increases from additional education are small and that effort, not education accounts for the difference, at least at the primary level.

3.52 Given the evidence given above, such a policy could cause particular problems in areas with limited availability. To the extent that the average village does not have individuals educated beyond the secondary level (the median village in Punjab had 8 secondary-school educated women in 1998), teachers holding a bachelor’s degree will have to be brought in from outside the village. As we have seen, absenteeism *increases* when teachers are not local hires, so overall effort is likely to decrease. Moreover there is an overall skill-

shortage in teaching the Pakistani economy. Higher government wages may attract a teacher with a bachelor’s degree, but not necessarily a better teacher.

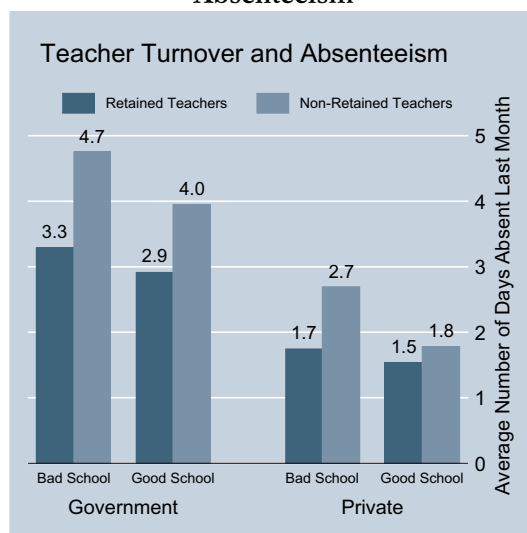
3.53 Increasing teacher training will probably not hurt in the same way as increasing the educational requirements for new teachers, but good training is expensive. In fact, it is too expensive an investment for rural private schools. The Ali Institute, for instance, runs a teacher training course of three weeks that costs Rs.3000 per teacher. It’s possible this amount could be better spent elsewhere.

An alternate option is to create an enabling environment for better learning. Three potential features of such a system would involve (a) decreasing the additional duties for teachers; (b) implementing a probationary assessment period before teachers are regularized (perhaps combined with incentive payments for teachers), and; (c) allocating teachers to those geographical areas and schooling levels where the private sector is not a presence, perhaps in combination with devolving teacher hiring and compensation to the district level.

3.54 *Let teachers teach.* The government needs to decide what it wants its teachers to do. Burdening them with additional duties and time consuming tasks detract from the job of teaching. In a typical village setting the teacher may be the only representative of the state and may be called upon to take a census for electoral rolls. Indeed, work-related absences for government teachers (though self-reported and unverified) are quite common: 26 percent of teachers in the public sector reported some work-related absence in the last month compared to barely 3 percent in the private sector. The reasons ranged from attending workshops and meetings, collecting salaries, being on examination duty in other schools, and administering polio vaccinations. Teachers absent due to emergencies was closer in both sectors—32 percent in the government and 26 percent in the private sector. The incentives on teaching are being confused with providing related government services.

3.55 *Consider a probationary period to identify and retain good teachers.* The only way to figure out who has talent as a teacher who does not is to observe them for some period of time. A reasonable amount of turnover should be expected. Yet, the public sector is a “settled” sector with very little turnover. More than 70 percent of government teachers in the LEAPS sample report have more than three years experience at the school they are teaching compared to 29 percent in private schools. In 71 percent of

Figure 3.15: Teacher Turnover and Absenteeism



private schools, a teacher left in the previous year compared to 24 percent in the government. Overall, in the private sector, 530 teachers left in the year preceding the survey and 690 new teachers were hired out of a total of 2,167 present in the survey year. In the government sector, 171 left, and 356 new ones were hired out of a total of 2,652 teachers. Figure 3.15 suggests that turnover, both in the public and private sector, may be good in that it gets rid of teachers who exert less effort. As the figure shows, whether we look at initially high or low performing schools, teachers who were not retained the following year were those who were more absent than the others.

3.56 A middle ground therefore might be a probationary period of two to three years during which the teacher is kept on a temporary contract. At the end of this period, the teacher may be converted to a permanent contract through a clearing process. The process for retention could evolve. Indeed, the Punjab government freeze on regular hiring of teachers in 2002 led to an increase in teachers hired on temporary contracts—although this was a response to a fiscal issue tied in to pension payments rather than as a means of improving accountability. These contract teachers may work, but only if (a) the government does not renew contracts for poorly performing teachers and (b) ultimate political pressures do not lead to their “regularization” (there are already agitations towards this step).

3.57 The data on contract teacher performance from the LEAPS study shows that contract teachers are absent less often, are more competent, and are paid less. This analysis is a bit misleading because contract teachers are also a considerably younger than the average teacher in public schools. A correct comparison would control for age, but this cannot be done in a simple regression context because there is no variation—all contract teachers are young, all public school teachers are older. In the future a more sophisticated analysis using regression discontinuity designs will be used.

3.58 *What about rewarding teachers for greater effort?* While few disagree with the overall premise of rewarding teachers for effort, the question of how best to do so is a subject of much debate. It is difficult to institutionalize a mechanism for rewarding effort – after all, how is effort measured? Current literature suggests it will be necessary to develop policies that combine different means of measuring effort, from “inputs” like attendance to “outcomes” like child test scores, and possibly even the “process” by which teachers teach. In recent small-scale randomized evaluations, rewarding teachers based on inputs or outcomes have both been shown to work; see Duflo and Hanna’s experiment of using cameras and compensation linked to days present for an example of the first and Muralidharan and Sundararaman (2006) on compensating teachers based on improvements in test scores for the second. Rewarding teachers strictly on objective *outcomes* is difficult. The objection is somewhat technical. Test scores display strong mean reversion—which means, that in any given year, the worst performers at the beginning will show the

strongest gains and the best performers the weakest. Thus, teachers who start with a poor class will get rewarded irrespective of what they do; those who start with a strong class will not get rewarded irrespective of what they do. The set of teachers who can change their compensation depending on their effort may be very small so that the scheme turns out to be very costly. Once teachers understand this process, gaming the system combined with outright cheating in tests will become pervasive (the experiment above was tried only for one year). Because of similar problems, every state in the United States has at some time tried and discarded this strategy. An alternative, advanced by Murgai and Pritchett (2006) is to reward teachers not on verifiable outcomes, but on verifiable processes. Under this scheme, the hiring and retention of teachers would be decentralized to the village level. Yet, this also comes with its own problems. Decentralization may or may not work in the Pakistani context. It would depend on issues of “elite capture” and how democratic and participative the ultimate process turns out to be. In the state of Uttar Pradesh in India, for instance, a recent survey revealed that even *members* of the “Village Education Committee” are not aware of their membership! The attractiveness of this proposal lies in its promise of giving power to the ultimate receivers of a service, but there is little evidence on whether such a scheme could or would work.

3.59 *Allocate government teachers where they are needed the most.* One of the most powerful tools for equity that the government holds in its hands is the right to transfer teachers to villages and schools where they are needed most. The inherent differences in salaries between the private and public sector is explored in the chapter on schooling. It will show that educating a child in a government school requires *twice* the resources needed to educate that same child in a private school when one is available. It makes little sense, if we are concerned about the right to education of the poor in Pakistan, for the public sector to *compete* with the private sector when both choices are available. Matters are made worse because the government sector competes not only for enrollment, but also for teachers in a limited labor market. Private school teachers desire jobs as public school teachers. When asked, one such teacher said: “*And would you not take a job where you are paid 4 times as much and do not have to work?*” Yet, in many villages there are no private schools. In areas or sectors where the supply of educated potential teachers is low, it will be difficult for private schools to hire and retain good teachers. The data show that private schools are likely to function better as literacy increases and that locally hired and resident teachers have lower absenteeism. As village literacy increases, the percentage of local teachers increases—in private schools, 39 percent are local in the least literate villages while 66 are local in the most literate (for government schools it increases from 28 to 48 percent). Similarly, the percentage of teachers who live within 15 minutes of the school goes up from 38 percent to 60 percent when we go from the least literate to the most literate category. Private schools will *only* function in sectors and geographical areas where supply of teachers is sufficient.

3.60 Given these supply issues one possibility may be to develop 2 different “cadres” of teachers: a provincial cadre that can be transferred across districts and a district cadre that can be transferred across villages. These cadres would provide education where the private sector is reluctant to go. They would also justify part of their high salaries because of the inherent difficulties of working in the places where they are posted. Although problems of accountability and incentives will remain, at least these teachers will be providing some education where none was previously available.

3.61 While some devolution for education has shifted from provinces to districts, teacher compensation and posting is still a provincial responsibility. As we have seen above, this does not permit different districts to take advantage of local conditions—where there are many educated individuals, wages should be lower. Allowing districts to come up with their own hiring, retention, and compensation policies would take the devolution process further and help strengthen local accountability mechanisms. At the same time, *recourse* to a centralized cadre (at a fixed cost per teacher) would ensure that they have access to trained personnel if needs cannot be met locally.

3.62 Of roughly 12 million employees in the government workforce, 3 million are teachers and they have strong unions, as do teachers around the world. Moreover, as a hangover from the British era, where teachers were the only educated individuals for miles on end, village teachers may be asked to man election booths, draw up voter lists, and work as part and parcel of the political system. A democratic debate on this issue must go beyond efforts to *compete* with the private sector, and focus instead on providing somewhat lower quality education in areas where the private sector is absent, and gradually withdraw provision (but not financing) as the private sector takes over. Widespread systemic reform is needed before the current cadre of teachers retires since it will take close to 25 years to refresh at least 50 percent of the teaching workforce. The question is whether Pakistan can afford to mortgage the future of 2 million children every year for the next 25 years to the desires of 3 million teachers.