



Private Schooling in India: A New Educational Landscape

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The logo for the India Human Development Survey (IHDS), featuring the letters 'IHDS' in a large, bold, green serif font with a slight shadow effect.

Views presented in this paper are authors' personal views and do not reflect institutional opinions.

The results reported in this paper are based primarily on India Human Development Survey, 2005. This survey was jointly organized by researchers at University of Maryland and the National Council of Applied Economic Research. The data collection was funded by grants R01HD041455 and R01HD046166 from the National Institutes of Health to University of Maryland. Part of the sample represents a resurvey of households initially surveyed by NCAER in 1993-94.

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Abstract

Private schooling in India has expanded rapidly in the past decade. However, few studies have looked at its implications for educational quality. Using data from the recently collected India Human Development Survey, this paper seeks to provide a description of private schooling in India and examine the effects of private school enrollment on educational quality. The results suggest that controlling for the endogeneity of school choice, children in private schools have higher reading and arithmetic skills than those in government schools. While overall gains are modest in size, about one fourth to one third of a standard deviation, the gains for students from lower economic strata are higher than those for upper income students. The paper explores this relationship by examining the treatment of students from different economic strata in government and private schools and finds that while students from lower economic strata are more likely to be physically punished in government schools than their better off peers, the relationship between parental economic status and physical punishment is negligible in private schools.

Introduction

Although the growth of private schooling in India is quite visible, even in rural areas, the contours of this change remain poorly understood because of data limitations. Official statistics often tend to underestimate private school enrollment (Kingdon 2007). Moreover, there is at best limited understanding of the effectiveness of private education in India. If parents know what is best for their children and if they are voting with their feet, we might assume that private schools must be of better quality than existing public schools. Two considerations suggest a need for deeper reflection, however: (1) There is a long history of school quality research in different contexts, particularly in the United States, which suggests that much of the apparent differences in schools are due to parental choices that propel children from certain backgrounds into certain types of schools (Hanushek 1997) and, (2) the panorama of Indian private schools is dotted with small, unrecognized and unregulated schools, frequently with poorly trained teachers. Anybody who has observed some of these schools would not automatically assume that private schools are better than government schools. Hence, it is important to empirically examine the impact of private school enrollment on educational outcomes

So far, lack of appropriate data has made it difficult to explore this issue. However, a new survey, the India Human Development Survey 2005 (IHDS), jointly organized by researchers from the University of Maryland and National Council of Applied Economic Research, makes it possible to explore some of the linkages between private school growth and school quality. Using data from IHDS, this paper will provide a description of public and private schools in India as well as some of the considerations that guide parents in selecting private schools. In addition to providing descriptive information, it will examine whether private school

enrollment is associated with higher student performance and whether this relationship, if any, is concentrated in certain sections of the population.

The second section describes the findings from the literature comparing public and private schools with a focus on findings from international studies, results from Indian studies and some of the policy considerations. The third section describes India Human Development Survey 2005 (IHDS) on which this paper is based and the methodology is described in the fourth section. The following three sections describe the nature of school systems in India, provide some descriptive statistics on the characteristics of private and public schools and also examine the social and economic background of students who attend public and private schools. Section 8 examines the impact of private school enrollment on child outcomes and the following section focuses on the characteristics of the children who benefit most from private school enrollment. The final section of this paper draws out the implications of our results for policy considerations.

Literature on Public and Private Schools:

Throughout the 20th century, as the role of the state grew in industrial societies and as many third world countries obtained independence, it has come to be universally accepted that education is one of the core functions of any mature civil society and has resulted in massive expansion of publicly provided education (Meyer et al. 1977). However, a growing dissatisfaction with the quality of public education has led to an increased focus on private education resulting in a spirited debate. In this section, we review the following dimensions of the public-private education debate: (1) International school effects debate; (2) Research on the quality of public and private schools in India; and (3) Policy alternatives under consideration.

School Effects Debate in an International Context:

The school effects debate in the United States began with the Coleman report of 1966. This report is most remembered for what it did *not* find, rather than what it did find (Coleman et al. 1966). It failed to find a relationship between school level inputs such as expenditures and teacher quality and children's performance. It concluded that children's educational trajectories are determined by their home environments and parental education rather than school level inputs. A cottage industry has developed in the United States which has tried to address this counterintuitive finding (Hanushek 1997).¹ Emerging literature on developing countries is also a patchwork of results with weak to negligible relationship between school inputs and child outcomes (Banerjee et al. 2007; Hanushek 1995). One of the most interesting contributions to this debate has concluded, however, that school effects are far more important to children in low income countries (Heyneman and Loxley 1983). Parental characteristics in these countries play a far less important role than school characteristics (Fuller 1987).

A second strand of this discourse centers on the role of private schools. Coleman and his colleagues went on to explore the determinants of children's schooling attainment and observed that enrollment in Catholic schools leads to better performance and a lower chance of dropping out for American children than enrollment in public schools (Coleman, Hoffer, and Kilgore 1982). In this precursor to the modern public/private school debate, the improvement in student performance was attributed to the "social capital" arising out of Catholic schools which creates a supportive environment that supersedes the influence of the family and encourages better performance on the part of all students, but particularly disadvantaged students (Hoffer, Greeley,

¹ One influential aspect of the Coleman report was the argument that peer influences play an important role in children's educational outcomes, consequently black children in integrated schools do better than black children in segregated schools with little decline in the performance of white students. This finding had far reaching impact in creating an impetus for court ordered busing of children to create racially integrated schools.

and Coleman 1985). This line of research has given rise to another cottage industry trying to compare achievement in Catholic schools, other private schools and public schools in the United States. There is considerable debate on whether higher performance of children in catholic schools is a function of school environment or of the characteristics of parents who opt for Catholic schools (Marks 2002).

The public/private school considerations in a developing country context rarely focus on the “social capital” inherent in private schools but instead arises out of frustration with the quality of public schooling and concentrate on efficiency issues (Glewwe and Patrinos 1999). Some of the early studies in this area found that in many developing countries, children from private schools perform better on various measures of cognitive skills than those from public schools (Jimenez and Lockheed 1995; Jimenez, Lockheed, and Paqueo 1991).

Unfortunately reasons for the greater effectiveness of private schools are poorly understood. In particular, it is difficult to draw the conclusion that private schooling per se, caused the observed improvement in educational outcomes (if any) and not the characteristics of the parents of who chose to send their children to private schools or some other processes associated with private school enrollment (Hanushek 1997). In particular, two dimensions of private school enrollment pose a challenge to conclusions that children in private schools learn more than those in public schools. (1) Parents who send their children to private schools tend to come from upper socioeconomic strata. While studies attempt to control for parental socioeconomic status, these factors are imperfectly measured and hence, at least a part of the relationship between private schools and children’s educational outcomes may be spurious. (2) Parents who send their children to private schools may place a greater value on education and

hence may encourage children to work hard at school and complete their homework. Thus, it may be parental influence rather than school quality that result in improved learning.

One way of eliminating this selection bias is to randomly assign children to public and private schools and compare their learning outcomes. However, even well designed experiments do not always yield clear cut estimates of school effects. Voucher experiments in Colombia and Chile provide interesting examples.

Colombia began experimenting with school vouchers in 1991 and provided vouchers to students entering grade 6 by randomly assigned lottery. This allows for a comparison of lottery winners and losers and the comparison indicates that the winners have lower dropout rate and somewhat higher tests scores than losers (Angrist et al. 2002). However, while random assignment controls for the endogeneity of school choice, it is difficult to use this experiment to conclude that private schooling increases educational attainment. Since students were at a risk of losing vouchers for poor performance, participation in voucher program may increase student motivation to work hard the effect of better school inputs may be inseparable from the effect of higher student motivation (Bettinger 2005).

Chile undertook one of the largest experiments in public funding of private schools beginning in the 1980s. Governments provided vouchers to students to attend private schools that were completely privately run and managed. Consequently, about 53% of the students study in municipal schools while 34% study in subsidized private schools with the remainder in unsubsidized private schools. A review of test scores of children in 4th grade from 10 studies notes that private school students have a slight advantage in test scores in five studies, four show little difference between the two and in one study the municipal schools students perform slightly

better than the private school students (Bellei 2008). This review goes on to note that private school admissions are selective and a poorly performing student can be easily expelled so the slight advantage in scores for private school students could easily be due to selectivity.

Research on Public and Private Schools in India:

In comparison with the extensive literature in other countries, research on public and private schools in India is still in infancy. However, studies in India have noted that government schools are more expensive than private schools with lower teacher accountability. Kingdon (Kingdon 2008) reports from micro study in the Uttar Pradesh that recurrent per pupil expenditure in private schools was only 41% of the expenditure in public schools; most of this difference occurs because teacher salaries are much lower in private schools compared to government schools. Another study in Delhi found that on average, the full time teachers teaching grade 4 in government schools earned Rs. 10071 per month compared to Rs. 3627 in private recognized schools and Rs. 1360 in private unrecognized schools (Tooley and Dixon 2005).

Another aspect of public schooling to attract considerable attention relates to the lack of accountability and frequent teacher absences (Chaudhury 2006; Muralidharan and Kremer 2006). Studies in India have found considerable absenteeism among school teachers in rural areas (ranging from 11 to 25%) and found that private school teachers are 2-4 percentage points more likely to be present in school than government school teachers (Muralidharan and Kremer 2006).

While research on student performance in government and private schools remains limited, what information is available, records higher performance on the part of students from private schools than from government schools. For example, a nationwide survey of rural

children's reading and arithmetic skill conducted by PRATHAM found that 60% of the rural children enrolled in standard V in government schools can read a simple paragraph compared to 70% for those in private schools (Pratham 2005). Similar results are shown by a study in Delhi slums (Tooley and Dixon 2005). However these studies do not fully control for the socioeconomic differences in children in government and private schools.

Private Schooling and Public Policy Debates:

Increasing dissatisfaction with the quality of public schooling has given rise to calls for increasing the involvement of the private sector in education and even public-private-partnership in the form of state provision of vouchers for private schools in India (Kelkar January 16, 2006; Muralidharan 2006; Panagariya 2008) and elsewhere (Tooley 2007; Chakrabarti and Petersen 2008).

Advocacy for public-private-partnership in early education depends on some crucial assumptions: (1) It assumes that private education can be more efficient and cost-effective than publicly provided education without diluting the quality of education; (2) Social class inequalities in access to private education are undesirable and can be addressed through state financing of privately delivered education; and, (3) Increased public funding of private education will not have a deleterious effect on public education.

Unfortunately, the advocacy for private education has fast outpaced the available research base in this area and none of these assumptions can be easily substantiated. Since parents who are able and willing to send their children to private schools tend to be highly educated themselves and value educational attainment, it is difficult to say that it is private school enrollment per se that causes the observed differences in skills between children in private and

government schools. When effect of government funded by privately managed charter schools in the United States are compared with government schools, results do not show substantial improvement in student performance (Fuller 2003). Moreover, growth of private schooling may be associated with flight of middle class parents from public schools, the very parents who are best able to increase school and teacher accountability and improve overall educational climate in public schools. Research on school and neighborhood effects suggests that the social and economic composition of student population in schools has an impact on school functioning (Jencks and Mayer 1990) and accountability as well as attitudes and aspirations of peers (Pong 1998; Roscigno 2000; Goddard 2003). Thus, migration of middle class parents may accelerate a downward spiral of public education.

This brief review suggests that while dissatisfaction with performance of public schools in providing education is an important driving force behind the advocacy for private schools, research in this area must carefully evaluate the evidence before engaging in policy prescriptions. While private schools have mushroomed in many parts of India, including rural India, whether they can be effectively utilized to provide a viable alternative to public education remains open to question and forms the topic of this paper. The literature reviewed above is useful in shaping the questions, but answers will depend on educational conditions on the ground in India.

India Human Development Survey 2005

India Human Development Survey of 2005 was jointly organized by researchers from University of Maryland and National Council of Applied Economic Research (NCAER). This survey was funded by grant from the U.S. National Institute of Health and builds on a prior survey by NCAER. This is a nationally representative survey of 41,554 households located in

both urban and rural areas of 33 states and union territories of India with the exception of Lakshadweep and Andaman Nicobar. The sample extends to 384 out of 593 districts identified in 2001 census and cover 1503 villages and 971 urban blocks located in 276 towns and cities.

A major innovation of this survey was to conduct short assessments of reading, writing and arithmetic skills for children aged 8-11. Conducting educational assessment in developing countries – particularly India -- is difficult for a variety of reasons: children's abilities vary tremendously and an instrument must capture children at both ends of the distribution; tests must be translated in many different languages with similar difficulty levels; the instrument must be simple and intuitive so that interviewers can administer it easily and it would not frighten children who are not used to standardized tests. Luckily, we were able to work with *Pratham*, a non-governmental organization that has worked in the field of elementary education for many years. They have developed simple assessment tools to measure the effectiveness of their training programs and administered these tools to over 250,000 children in their nationwide survey reported in Annual Status of Education Report 2005 (Pratham 2005). These tests were included in the IHDS and allow us to measure whether a child is not able to read at all, or is able to read letters, words, sentences, paragraphs or stories. Simple addition, subtraction, multiplication and division problems were also developed. English version of the test is reproduced in Appendix.

Interviewers were trained extensively by Pratham volunteers using specially developed films so that they could differentiate between a child's shyness and inability to read. They were also taught how to develop rapport with children. Tests were developed in 12 Indian languages as well as English and children were asked to take the test in whichever language they were most comfortable in.

In all the IHDS sample consists of 17,117 children aged 8-11. Reading and arithmetic tests were administered to 72% of the children aged 8-11. Children may not be tested for two reasons: (1) Interviewers were explicitly instructed to obtain parental consent as well as assent from children for testing and were asked not to pressurize children who were reluctant; and, (2) Since the household survey was the main focus of this study, the administration of the reading and arithmetic skills was left to the end. We suspect that household fatigue as well as interviewer fatigue may have played a role in missing skill testing. Appendix Table 1 shows the proportion of children tested by a variety of household and background factors. Results suggest that children who are currently not enrolled are the least likely to be tested. Beyond this, while there is a mild difference in test completion rate between different social and economic groups, this difference is not large. There is little difference in test completion for children in private and government schools. While instruments for test completion are difficult to find, a Heckman selectivity correction relying on probit-linear regression combination was not statistically significant nor did it change any other coefficients substantially.

The test data we have available to us are quite unique, particularly since they are combined with a wealth of household and contextual characteristics. Children are classified according to their ability to read, in one of the five categories: (1) Cannot read at all; (2) Can read letters but not form words; (3) Can put letters together to read words but not read whole sentences; (4) Can read a short paragraph for 2-3 sentences but not fluent enough to read a whole page; (5) Can read a one page short story. In all 12,394 children aged 8-11 were administered the reading test; excluding cases with missing data on independent variables as well as non enrolled students, the analytic sample for reading skills consists of 11,702 children.

Children's mathematical skills are classified in four categories: (1) Cannot read numbers above 10; (2) Can read numbers between 10 & 99 but not able to do more complex number manipulation; (3) Can subtract a two digit number from another; (4) Can divide a number between 100 and 999 by another number between 1 and 9. Note that we focus on 2 digit numbers to avoid calculations on fingertips and to get a better estimate of true understanding of subtraction and division. Also, given the Indian system of expecting children to memorize multiplication tables from 1 to 20, we chose to test children on division rather than multiplication skills. In all 12,345 children aged 8-11 were administered the arithmetic test; excluding cases with missing data on independent variables as well as non enrolled students, the analytic sample for reading skills consists of 11,655 children.

In addition to the household module, the survey also included a primary school module where the interviewers were asked to conduct a school facilities survey for one public and one private primary school in each village/urban block. When more than one facility was available in each block/village, interviewers were asked to select the facility which was predominantly used by the residents. The school facilities survey provides an interesting description of the schooling climate in India. However, given the differential use of private and public schooling in different parts of India, the results from this survey should be treated as being indicative of the schooling climate around different parts of India rather than providing a representative sample of primary schools.² However, this survey provides us with some interesting exclusions restrictions to handle the endogeneity of choice of private schools.

² With appropriate weighting these data can provide a representative sample of public and private schools. However, the descriptive results in paper are unweighted.

Methodology:

The primary goal of this paper is to examine the relationship between enrollment in private schools and academic skills for children aged 8-11. In view of some of the methodological considerations outlined above, we rely on a variety of techniques to obtain a sense of the magnitude of this effect. Specifically we examine the impact of private school enrollment on children's verbal and mathematical skills using ordinary least squares regression, Heckman control function method based on exclusion restrictions (Heckman and Navarro-Lozano 2004) and family fixed effects models. Triangulation based on these three methods allows us to develop a range of estimates for the impact of private school enrollment on children's skills.

The Heckman control function method assumes that the underlying model is:

$$Y_i = \beta X_i + \delta Z_i + \epsilon_i$$

Where Y_i is the child's score on reading and arithmetic tests, Z_i reflects private school enrollment and X_i , includes controls for a variety of background characteristics including state of residence, urban/rural residence, caste/tribe/religious background of the parents, child's age, sex, highest level of education obtained by parents in the household, household size, log of annual household income and household's score on an index of possession of a variety of consumer durables. The switching regression is identified by W_i , the instruments which affect private school enrollment. These include presence of a private school in the village, whether English is taught early on, presence of a cook in government school, and household's social networks. These variables are described in greater detail in a later section.

Further, Z_i in the equation above is supposed to stem from an unobservable latent variable:

$$Z_i^* = \gamma W_i + u_i$$

The decision to send a child to private school or not is made according to the rule:

$$Z_i = \begin{cases} 1, & \text{if } Z_i^* > 0 \\ 0, & \text{if } Z_i^* \leq 0 \end{cases}$$

These equations are estimated in STATA using the TREATREG routine with full maximum likelihood. Instruments used in identifying the selection equation are discussed along with the characteristics of private and government schools in India below. Due to the reliance on probit-linear combination, the dependent variables – reading and arithmetic skills – are assumed to be continuous variables for this analysis.

Since results from this method are highly sensitive to the choice of exclusion restrictions (Stolzenberg and Relles 1997), we supplement this analysis with a highly restrictive family fixed effects model. Impact of private schooling on children is riddled with concerns about the fact that families which choose private schools are different from those that choose government schools and any observed relationship between private schooling and child outcomes could be due to these unobserved factors. One way of addressing this is to compare the achievements of children within the same family based on whether they go to private school or not, i.e. adding a dummy variable per household. We supplement the analysis using Heckman control function method with family fixed effects models to give us another estimate of school effect.

Growth of Private School Enrollment in India:

The Indian educational panorama consists of a variety of schools. While schools run by central, state and local governments comprise a clear “government” sector, the private sector consists of three types of schools: (1) Schools which receive government grant-in-aid but are privately run; (2) Schools that receive little government funding but are recognized based on certain criterion outlined by the government and must follow certain regulations; and, (3) Schools which are unrecognized and might not meet the criteria – such as infrastructure or teacher salaries – needed for recognition. Private schools which receive grant-in-aid, normally called aided schools, resembled private schools in early decades following Independence. They received money from the government but teachers were directly hired and paid by the schools. Since 1970s, these teachers receive their salary directly from the state and are recruited by a government appointed commission but their routine operations are governed by the private management (Kingdon 2008). Hence, in cost and teacher qualification they are similar to government schools but retain a private character in management and day-to-day operations. Private recognized schools must meet certain criteria regarding infrastructure, teacher qualifications and salaries to receive recognition, however, some schools manage to slip by without fully complying with the regulations. The private recognized schools tend to be larger, often run by non-profit management, and be located in urban areas. In contrast, the unrecognized schools tend to retain a home grown flavor and are frequently run in a more ad-hoc fashion, sometimes in the back of a teacher’s home.

Private school enrollment in India has been rising rapidly with 20-24% of the rural students being reportedly enrolled in private schools (Pratham 2005). Primary education has been a priority for the Indian government for many decades. Successive Five Year Plans have

emphasized the importance of investing in primary schooling with a plethora of government programs (Govinda 2002). Hence, the rapid rise in private school enrollment comes somewhat as a surprise. Even now, official statistics do not fully capture the growth of private school enrollment. Official data from the Seventh All India Survey of Education show that the share of private schools in primary enrollment is about 6% in rural areas and about 29% in urban areas. However, there are good reasons to believe that this is a substantial underestimate (Kingdon 2007)

Official statistics don't usually collect data on unrecognized schools and consequently tend to underestimate the size of the private sector (Kingdon 2007). The 1993-94 household survey by NCAER (Shariff 1999) found that about 10% of the primary school students in rural India were in private school while the comparable figures from the Sixth All India Survey by National Council for Educational Research and Training conducted in 1993 recoded only about 3% in private unaided schools, The 2002 Seventh All India Educational Survey conducted by the National Council for Educational Research and Training found 5.8% enrollment in private (unaided) schools in rural areas and 28.8% in urban areas. If aided private schools are included, this number swells to 9 and 45 percent respectively in rural and urban areas. However, household based surveys – which include both recognized and unrecognized schools – document a higher prevalence. Consequently the ASER survey conducted by Pratham in 2005 (Pratham 2005) and confined to rural areas, found that private school enrollment for rural children was nearly 20%.

[Table 1 about here]

The India Human Development Survey 2005 documents similar enrollments. Table 1 shows that at the all India level, about 68% children are enrolled in government schools with

42% and 76% of the urban and rural students in government schools. Private enrollment – combining enrollment in aided and unaided private schools, madrasas and convents forms 58% and 24% of the urban and rural enrollments respectively among children age 6-14. We combine aided and unaided schools into a single category -- “private schools”-- because parents may often not know the exact management of the schools their children attend, resulting in considerable measurement error. Moreover, private aided schools are similar to private recognized but not aided schools in many ways since teacher recruitment and performance are monitored by school management using locally appropriate standards and increasing numbers of teachers are paid by the management rather than by government (Chopra and Jeffrey 2005).

As Figure 1 indicates, private school enrollment rises in higher standards but even for primary schools, the proportion in private schools is substantial.

[Figures 1 about here]

This can be costly, of course. Figure 2 shows the average educational costs for private and public schools by current standard. The average primary student in a private school pays Rs. 600 in fees and another Rs. 600 in expenses for book, uniforms, and transportation (compared to Rs. 20 and Rs. 200 for government schools). Furthermore, while only 17% of the children in government schools get private tutoring, nearly 27% in private schools do so and when they do get private tutoring, median cost for private school students is Rs. 600 instead of Rs. 500 for the private school students. Note that these costs are per student per years, borne by the family and do not include government expenditure.

[Figure 2 about here]

Characteristics of Public and Private Schools in India:

As we designed and fielded the India Human Development Survey 2005, we had the opportunity to talk to many parents. We heard two main themes in their explanations of why they sent their children to private school: (1) Government schools are not good around here; the teachers are often absent and don't work hard even when present; and, (2) We want our children to learn English, and the private schools are English medium or teach English earlier than the government schools.

[Table 2 about here]

The parents' observations have good empirical support. As Table 2 indicates, the school facilities survey in the IHDS found that about 12.4% teachers in government schools were not present on the day of the survey. While these estimates are below the 25% absenteeism found in more detailed studies using multiple unannounced visits, the data nevertheless reflect some of the same public/private differences (Chaudhury 2006; Muralidharan and Kremer 2006). While private school teachers are only 2 percentage points less likely to be absent overall, a within village fixed effects model shows that private school teachers are 1.39 times as likely to be present on the day of the visit as government school teachers. The within village results differ because private schools may be located more often in villages with low attendance rates by public school teachers. This correlation may result either from private schools prospering in areas with weak public schools or because the rise of private schools results in deterioration of public schools by removing civic pressure on the government schools system.

Our data also show that private schools have better facilities such as desks, flush toilets, and fans. The differences in teacher characteristics between private and government schools are

striking. Private school teachers are more likely to have a college degree but less likely to have received teacher training than government schools. Part of this difference may be that employment in government schools is conditional on a training certificate.

Government and private schools also differ substantially in the provision of a mid-day meal. After Tamil Nadu introduced a successful mid-day meals program in its schools, the National Program of Nutritional Support to Primary Education was launched across India in 1995. The mid-day meals program (MDM) aims to increase primary school attendance, as well as improve the nutritional status of school children. Generally, the program serves the 6-11 year age group. However, some upper primary schools run the MDM program as well, and in recent union budgets separate provision has been made for the upper primary school also. Under the mid-day meal scheme, cooked meals are to be served during the lunch time in the school, with calorie value equivalent to 100 gm of wheat or rice per student per school day. In some places, a dry ration is provided to be carried home based on a certain minimum level of school attendance.

The IHDS data report 60% of children up to standard five receive mid-day meals or free grains. Of these, 35% receive the full mid-day meal program; 8% get only dalia for the meal; and 16% are given grains in place of the meal. These programs are mainly found in government schools. Among private schools, only 8% of primary students participate compared to 80% at government schools. It would be reasonable to expect that a fully functioning mid-day meal program would increase the likelihood that a child attends government school and one of the indicators for a functioning mid-day meal program is the presence of a cook in the school (Dreze and Goyal 2003).

Similarly, IHDS data presented in Figure 3 show that private schools are more likely to teach English early.³ While only 5% of children in government schools are taught in English exclusively, nearly 37% of children in private schools are. When the initial medium of instruction is a vernacular language, English is introduced in earlier standards in private schools.

[Figure 3 about here]

The school facilities, teacher absenteeism, and English medium results suggest that parents send their children to private schools for good reason. Obviously, private school students are a selected population coming from higher socioeconomic backgrounds. It will be important to control for this selectivity insofar as possible when examining the impact of private schools on student performance.

Characteristics of Private school Students:

Table 3 provides descriptive statistics for our sample, private school enrollment as well as children's ability to read a simple paragraph and do basic two digit subtractions. In recent decades, there has been a sharp increase in school enrollment, about 92% of the children aged 8-11 in IHDS are in school; of these, about 31% of the children aged 8-11 are enrolled in private schools. In keeping with generally preferential treatment of boys in Indian families, boys are somewhat more likely to be enrolled in private schools than girls. Private school enrollment seems clearly associated with higher income and education of the household. Interestingly, students in metro cities are about as likely to enroll in private schools as students in smaller cities and, controlling for income and education of the adults in the household, enrollment in private

³ Table 2 is based on school data and not nationally representative of the experiences of students. Figure 3 is based on student data which are nationally representative.

schools is marginally lower in metropolitan cities than in other urban areas. This is probably due to the presence of higher quality central government schools in major metropolitan areas, particularly Delhi.

[Table 3 about here]

Caste and religion seem associated with private school enrollment. Forward castes and other minorities groups such as Christians, Sikhs and Jains are far more likely to send their children to private schools than dalits and adivasis with Muslims and Other Backward Classes (OBCs) falling in the middle. Results from multivariate analyses (not reported here) indicate that even after controlling for parental income and education, dalit children are substantially less likely to be enrolled in private school.

[Table 4 about here]

State differences in private schools are interesting. Private school enrollment in one of the high education states, Himachal Pradesh, is low while it is high in Kerala, the other high education state. Uttar Pradesh has considerably higher private school enrollment than the neighboring Bihar. Some of these regional differences in private school enrollment may well be associated with socioeconomic background of its residents but may also reflect some differences in state policies. Christians are substantially more likely to be in convent schools and the Christian population is high in the North East and in Kerala. However, history also plays a substantial role.

Exclusion Restrictions for Private School Enrollment:

The brief description of students in private schools as well as the literature cited above clearly suggests that private school enrollment is a choice variable and while we expect to control for observable family background factors such as education, income and household size, these controls may be inadequate due to omitted variables as well as measurement error in some of the included variables. In order to estimate the Heckman control function discussed above, instead of relying simply on distributional assumptions, we rely on theoretically motivated exclusion variables which are expected to be associated with the decision to enroll in private school as well as private school admission but are not expected to be independently associated with educational outcomes.

- (1) **Availability of private schools:** Private school enrollment is dependent on a complex interplay of supply and demand. Social composition of an area, history, and state policies all play an important role in shaping the availability of private schools. Hence, availability of private schools is an important instrument for private school enrollment which has been used in the literature (Jimenez, Lockheed, and Paqueo 1991). We assume that in all urban areas private schools are available.
- (2) **Desirability of public schools:** Given the IHDS's focus on school surveys, we also included a set of variables describing the characteristics of government schools in the village/urban block as factors which may motivate parents to favor or not favor government schools. These include English medium instruction for some academic subjects, early introduction to English language, and presence of a cook in the government school as a marker for the draw of the mid-day meal program. Since school surveys for some localities were not conducted due to interviews taking place

during weekends or holidays, a variable denoting missing school survey is included in the analysis.

- (3) **Parental ability in gaining entrance in private schools:** Private school enrollment is not simply a function of parental preferences. In urban areas, admission into quality private schools can be a highly competitive process in which parents with broader social networks gain an edge over less connected parents. Consequently, we also control for two markers of family social networks, whether the household members know anyone working in the medical profession and whether they know anyone working for the government. These variables are described in Table 5.⁴

[Table 5 about here]

While switching regressions estimated with maximum likelihood are considered both unbiased and efficient, they are highly dependent on the validity of the exclusion criteria as well as their strength as predictors of private school. Table 6 shows the first stage regression with the exclusion variables listed above as predictors. The results show that with the exception of English medium instruction, each of the other variables is associated with private school enrollment in the direction expected and these relationships are statistically significant. Overall the model is highly significant with a Chi Square of 704 and 7 degrees of freedom.

[Table 6 about here]

⁴ This analysis has been carried out with and without the two variables measuring social networks due to our concern that the network measures may not be truly exogenous. The coefficient for private schools in the regression with smaller set of instruments was similar in magnitude but had a greater standard error. The school variables are excellent instruments for rural India; for urban areas since parents have choices beyond the local school, having other instruments makes the results more robust.

Private School Enrollment and Child Outcomes:

As the brief overview of literature presented above suggests, it is important to be cautious about drawing inferences based any perceived relationship between private school enrollment and children's skill acquisition. Hence, in this section we first describe the basic relationship between private school enrollment and children's performance on reading and arithmetic tests while controlling for observable characteristics of their households; then we address the issue of endogeneity using a switching regression model in which school choice is captured by a set of theoretically motivated exclusion restrictions; finally, we examine the impact of private school enrollment on child outcomes within a highly restrictive framework, family fixed effects model.

[Figures 4 and 5 about here]

Figures 4 and 5 indicate basic differences in reading and arithmetic skills among children enrolled in government and private schools. Results seem to suggest that without controlling for family background, private school students have higher achievement on these tests. These differences are further analyzed by adding controls for parental socioeconomic background, place of residence and children's sex, age and current standard. In addition to private school enrollment, these regressions control for highest education level attained by any of the household adults, log of family income, a thirty item standard of living index consisting of ownership of various consumer durables (TV, refrigerator, telephone, car, cot etc.) and quality of housing (toilet, piped water etc.), household size, number of children under age 15, place of residence, state of residence, child's sex and age. Caste, ethnicity and religion are particularly important to control for since they are linked to private school enrollment, particularly enrollment in madrasas or convents, as well as having an independent impact on educational outcomes (Desai, Adams,

and Dubey Forthcoming). Controls for state of residence are also included in each regression, although not presented in the tables.

[Table 7 about here]

In Model 1, the basic OLS model, students' reading and arithmetic skills are regressed on a set of independent variables including enrollment in private school. As might be expected, parental education, urban residence, household income and index measuring standards of living are all positively associated with student performance on these skill tests. However, while standard of living – a marker of long term economic status – is consistently statistically significant, log of household income is not. This may be because income contains considerable year to year fluctuation while standard of living indicates permanent income, a variable with longer term impact on well being. While it is reasonable to see skills increase with age and current standard, the coefficient on sex is surprising. Holding age and current standard constant, girls have lower performance on both reading and arithmetic tests, possibly due to greater demands of household chores compete with time spent doing homework. In international studies, girls generally perform slightly above boys in verbal tests and slightly below boys in mathematical tests.

Enrollment in private school is positively related with higher performance on both verbal and mathematical skills. While the coefficient for verbal skills is slightly larger, it is important to remember that the skill levels range from 0 to 4 for the verbal skill and from 0 to 3 for mathematical skills.

The second model corrects for the endogeneity of school choice by using a Heckman type correction, in which the binary choice of attending private school or not is modeled with the set

of exclusions restrictions described above. The results from this endogenous switching regime are presented in Model 2. The first stage probit model (presented in Table 6) suggests that our instruments are highly correlated with private school enrollment. Each is statistically significant and in the expected direction – with the exception of English medium instruction. The second stage regression includes the effect of private school enrollment on reading and arithmetic skills, correcting for the biases introduced due to endogeneity of school choice. As might be expected, the coefficients for private school are smaller in size than those from the naïve OLS regression models; however the difference is not substantial. Nor is the *lambda* statistically significant. The Wald test for independence of regressions is not statistically significant suggesting that the possibility that selection equation and achievement equation are unrelated cannot be ruled out. This suggests that while omission of the endogenous nature of school choice introduces some bias in the regression estimate the size of this bias is not very large. The regression coefficient for private school from the uncorrected model for reading skill is 0.39 while in the model correcting for endogeneity it is 0.36. The difference for arithmetic skills is similar in magnitude, 0.28 vs. 0.22. Since the standard deviation is 1.35 for reading skills and 1.03 for mathematical skills, the improvement associated with private schools is about one fourth to one third of a standard deviation.

Results from any models relying on instrumental variables are only as good as the instruments themselves. Hence, we compare these results with those from a strongly restrictive model – family level fixed effects model. Here we assume that all family influences – such as desire for education and parental encouragement – are shared by all children in the family. Children differ mainly in their personal characteristics such as gender, age, standard and private school enrollment. These family level fixed effects models continue to suggest that private

school enrollment is consistently related to higher performance and the magnitude of these coefficients is similar to those obtained from the switching regression.

These results suggest three things: (1) Private school enrollment is associated with higher child outcomes, even after controlling for a variety of family factors; (2) Size of this effect is statistically significant but moderate with average improvement being about one fourth of a standard deviation; and, (3) The coefficients from these three models are not vastly different from each other.

Some caveats in interpreting these results are in order. One of the greatest difficulties in interpreting the association between private school enrollment and children's educational outcomes is affected by biases at various levels. (a) **Within family choices:** Parents when faced with spending scarce resources on children's education may choose to send an academically gifted child to private school. Hence, in within family fixed effects models any association between private schools and child scores may be due to children's ability rather than school. The only way of addressing this would be via longitudinal data in which one would try to examine the differential growth in educational achievement between children in private and government schools, holding their initial talent constant. This may be particularly important because studies have also found that at times, educational innovations or programs, have a large initial impact with declines in magnitude over time (Banerjee et al. 2007). Cross sectional analyses like ours are unable to do this. (b) **Differential value placed on education between families:** Some families value education more than others and may be more likely to invest in by sending children to private school and ensuring that they do their homework. While we have tried to control for these differences using switching regression, some of the variables in the model, such as having greater access to social networks may not be fully exogenous. In particular, household

with greater social connections may have a greater ability to get their children into private schools (as we argue) and at the same time, may have greater returns to education in the form of better access to jobs. (c) **Differential demand for education across communities:** Some of our exclusion restrictions rely on village level access to private schools and characteristics of public schools. It is possible that communities may differ in their demand for schools and certain types of education such as early instruction in English. Hence, it may be higher demand for high quality education that may lead to better outcomes rather than access to private schools. While this seems a more remote possibility – it is difficult for parents and communities to change government school curriculum and ensure early English instruction – it is not impossible.

However, we have used a variety of techniques and excluded variables with the expectation that while each may retain some sources of bias, together they provide us with a rough indication of whether private school enrollment might be associated with higher performance or not. Our results suggest remarkable similarity of effects across the three models. It is possible that some of these effects are overestimated; particularly, the within family fixed effect may decline if children's ability is taken into account. However, if the results we present suggest an upper bound for the impact of private school education, the estimated effects are no more than one third to one fourth of a standard deviation. As we discuss below, in comparison to inter state differences in educational outcomes, these are modest effects.

Which Children Benefit the Most from Private School Enrollment?

The debate on the validity of evidence about the impact of private schooling, or lack thereof, has occupied the center stage in such a way that there has been little room for studying differences in potential benefits of private schooling. In this paper we focus on the interaction

between parental economic status and school type to explore the mechanism through which private schools may influence child outcomes. Research on the United States suggests (Hoffer, Greeley, and Coleman 1985) that benefits of private schools accrue disproportionately to disadvantaged students. In order to examine this, we interact private school enrollment with household standard of living in model 2 from Table 7, i.e. the Heckman switching regression. In this analysis private school enrollment is interacted with the 30 item standard of living index,⁵ while controlling for the selection into private schools using the instruments discussed above.⁶

[Figures 6 and 7 about here]

This interaction term is highly significant and negative in sign and the coefficients are presented in Appendix Table 2. Results from this analysis are graphically presented in Figure 6 and 7 which suggests that benefits to private school enrollment for children from lower economic strata are far greater than those for children from upper economic strata and at upper income levels, the difference between private and government school narrows considerably. The lack of difference between private and government schools at upper income levels is not surprising; parent with the means to send their children to private school would only select government school if it is high quality. A good example may be university professors whose children attend central government schools located on campus and run with great deal of intellectual input from the campus community. However, the benefits of private schooling to poorer children are more intriguing and deserve greater attention to the mechanisms through which these benefits accrue.

⁵ While not reported here, we obtain similar results for interaction between household education and private schooling and between place of residence and private schooling with children from lower education households and those from least developed villages benefitting the most from private school enrollment.

⁶ The same analysis was conducted with the naïve regression model without taking into account endogeneity of private school enrollment and results were similar. This is not surprising given the similarity of results from models 1 and 2 in Table 7.

While the U.S. research has tried to understand the mechanisms through which experiences of students in private and government schools may differ, in the developing country context little attention has been directed to this issue. In the following analysis we attempt to provide some qualitative information on experiences of children in government and private schools. We note that this part of the analysis is suggestive rather than conclusive since it is difficult to determine the causal direction of the association. Nonetheless, this may well be the only data where even associations can be explored.

The IHDS interviewed parents about the schooling experiences of up to two children in the household. Two variables in this section are interesting: (1) Whether the parent reported that the child was praised in the month preceding the survey; and, (2) Whether the parent reported that the child was physically beaten or pinched in the month preceding the survey. On both of these variables, private school students fare better than government school students. About 25% of the government school students were praised compared to 42% in private schools and about 29% of the government school students were beaten compared to 25% in private schools. However, it is the interaction of school type with family's standard of living that is of greatest interest.

[Figure 8 about here]

Figure 8 shows the predicted probability of the child being praised by school type and parental economic status. This probability is calculated from a probit model which controls for the selection factors as well as the family background factors in Table 7 with the coefficients presented in Appendix Table 2. The results indicate that children from higher economic strata are more likely to be praised and the slope of this line does not differ considerably between

government and private schools. Positive reinforcement is really important in any setting but particularly in Indian classrooms where constant comparisons⁷ and attendant humiliation are fairly common. Greater positive reinforcement in private schools may be a reflection of better learning environment in these schools, although social class clearly seems to play a role in both settings.

[Figure 9 about here]

Figure 9, however, shows a very different picture when it comes to the probability that the child was beaten or pinched. There is little difference in the likelihood of physical punishment by parental economic status for children in private school; however, there is a strong negative relationship between economic status and punishment in government schools. In government schools, children from poorer homes are far more likely to be punished than those from richer homes.

Many educational researchers have remarked upon the pervasiveness of physical punishment in Indian schools (The Probe Team 1999); indeed, our estimates suggest that nearly a quarter of the children were physically punished in the prior month. We suspect that this humiliation does not create an environment conducive to learning and if children (and their families) perceive this punishment to be unfairly meted out, it may lead to even greater alienation among students from poorer households. In contrast to government schools, in private schools parents may be able to demand fair treatment and although physical punishment remains rampant even in private schools, it does not seem to be associated with children's social class. It may be tempting to argue that the teachers who teach in private schools are more egalitarian than those

⁷ Many schools rank students in a class explicitly in comparison to each other and ranking is clearly known to students and their families.

in government schools but the evidence from the likelihood of the child being praised contradicts this argument. When it comes to positive attention, richer students receive more attention in both settings, although the intercept is higher for private schools. However, the link between parental social class and negative attention is nonexistent in private schools.

These results suggest a need to pay greater attention to qualitative dimensions of classroom environment. While teacher presence and accountability may be one of the avenues through which private schools outperform government schools, hidden aspects of classroom environment such as positive reinforcement and reduced discrimination against disadvantaged children may be equally important.

Lessons for Public Policy:

As we document modest but statistically significant improvements in reading and arithmetic skills of students in private schools and further note that these benefits are particularly concentrated among disadvantaged students, it may be tempting to argue that perhaps private schooling is the *amrit* or the elixir that will cure Indian education. If the reader were to come to this conclusion he or she would be in good company given the rising chorus of advocacy for private schools around the world (Kochar 2001; Chakrabarti and Petersen 2008; Glewwe and Patrinos 1999; Dixon and Tooley 2005). However, a number of considerations suggest caution before leaping to this conclusion. These fall in two categories: (1) Empirical results based on our data; and, (2) Theoretical issues raised in the literature.

Empirically, we find that while private school students perform somewhat better than their government school peers, these effects are modest compared to other structural effects.

Table 8 provides an overview of the inter-state variation in reading skills across India based on

the model 2 from Table 7 with state of residence and private school interaction term added.⁸ Column 1 shows unadjusted differences across states; column 2 shows the predicted scores for students in private schools, holding their family characteristics constant at all India means; column 3 shows the predicted scores for students in private schools and the final column shows the difference between predicted scores in private and government schools. The states are sorted from lowest difference to highest difference.⁹

The results show substantial inter-state variation in the scores of both government and private school students. Controlling for parental characteristics, government school students in states as diverse as Kerala, Himachal Pradesh, Chhattisgarh and West Bengal perform at a higher level than private school students in many other states. Within states, the performance of private school students is not consistently higher than government school students and in some states government school students do better than private school students. Most importantly, private school advantage seems to be located in states like Bihar, Uttar Pradesh, Uttarkhand and Madhya Pradesh – states known for poorly functioning public institutions as well as being some of the poorer states in India. These results are consistent with the findings for Uttar Pradesh from other studies which find large differences in student outcomes for children from “best” schools in poorly performing districts and “worst” schools in better performing districts (Das, Pandey, and Zajonc 2006).

These results suggest that before a blanket embrace of private schooling, it may be worthwhile figuring out why some government schools function well and others do not. Blaming teacher absence may seem intuitive but the complete story may be more complex.

⁸ For brevity we do not present results for arithmetic skills but they present a similar pattern.

⁹ Note that while all India sample is fairly large, about 11,700 children aged 8-11, the sample sizes at state level are considerably smaller and these results should be treated with caution.

While our school data become somewhat unreliable when we start comparing across states due to limited sample size, we find that public school teacher absence is higher in states like Kerala (17%) than in states like Uttarkhand and Punjab (4% and 9% respectively), however gains to private schooling are only modest in Kerala but considerably larger in Uttarkhand and Punjab.

Theoretical considerations also suggest caution before a massive embrace of school voucher program. If classroom environment is affected by the demands paying parents – most of whom are middle class – place on teachers, a voucher program which leads to an influx of poorer parents may dilute this effect. Kerala is an interesting example, 61% of the students in our sample in Kerala are in private schools¹⁰ but as Table 8 indicates students in Kerala appear to have only a modest gain associated with private school enrollment, although it is possible that even here poorer students may benefit more. Students in Haryana and Tamil Nadu, other states with large private school enrollment, show a loss in skills for students in private schools compared to their government school peers. These observations are comparable to those from the voucher program in Chile where some studies evaluating Chile’s massive voucher program record modest gains and others record a loss for students in private schools (Bellei 2008).

These observations suggest that it may be worthwhile examining the differences in classroom environment between government and private schools and the processes through which these occur before shifting our attention to private schooling as the panacea for the ills of public education. The differential slope of parental social class on physical punishment between government and private schools provide an interesting illustration. If children from poor households in private schools benefit because their parents are able to ensure that they are not

¹⁰ Kerala has a substantial proportion of students in government aided schools – one version of voucher schools. These are included with private schools in this analysis.

physically punished, would this benefit be diluted if parent were not paying the tuition but were relying on school vouchers? Are there other ways of ensuring that government school teachers do not resort to discriminatory behavior? To date, the discourse on benefits to private schooling in developing country context has focused on teacher absence and lack of accountability and to some extent, lower costs of private schooling. While these are important, perhaps a better understanding of how parental social class operates in government schools and shapes student learning may be a useful contribution to this research.

We sound these cautionary notes because an enthusiastic embrace of private school through large voucher program has a potential for disrupting existing structure of public education. Transfer of better educated or better motivated families into private school system may negatively affect the quality of public education; a deterioration that may be difficult to reverse. Hence, a thoughtful evaluation of private and public education coupled with experimental programs in a few geographically diverse districts may be a more reasonable strategy at this juncture in Indian development.

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Fig. 1. Enrollment in Private School by Current Standard

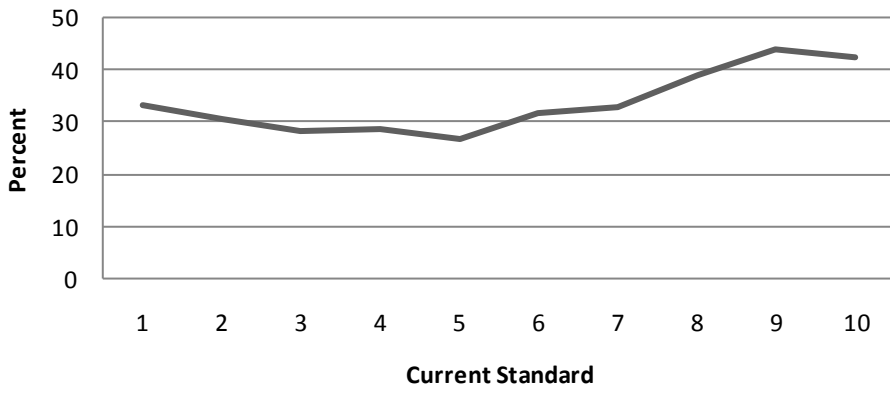


Fig. 2. Total Educational Costs by Standard for Public and Private School Students (Age 6-14)

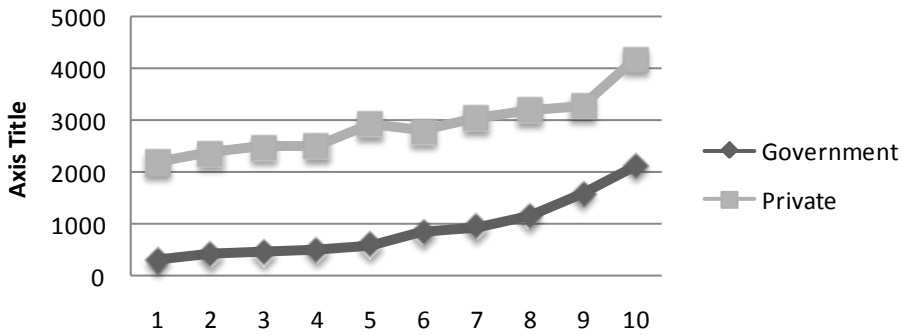


Fig. 3. English Instruction by Type of School, Children Age 6-14

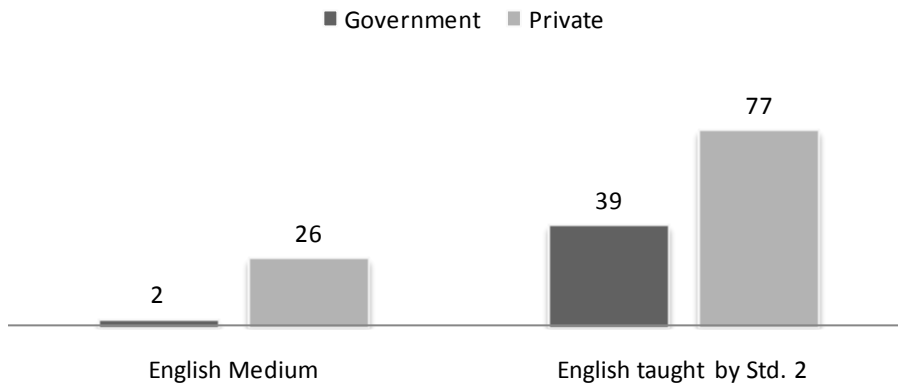


Fig. 4. Distribution of Reading Skill by School Type

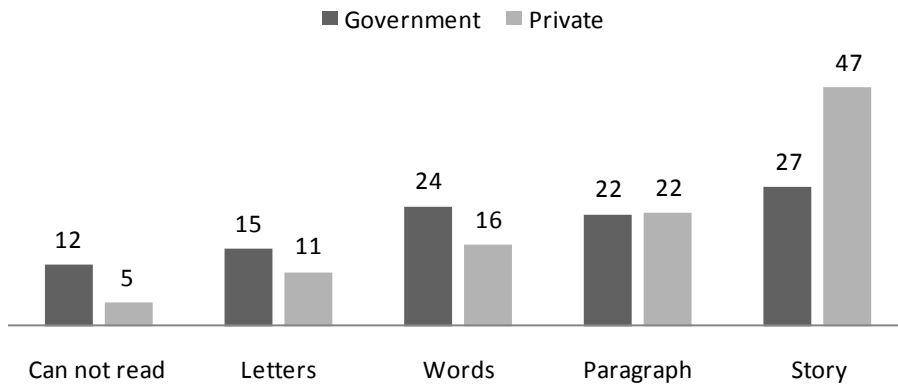


Fig. 5. Distribution of Arithmetic Skills by School Type

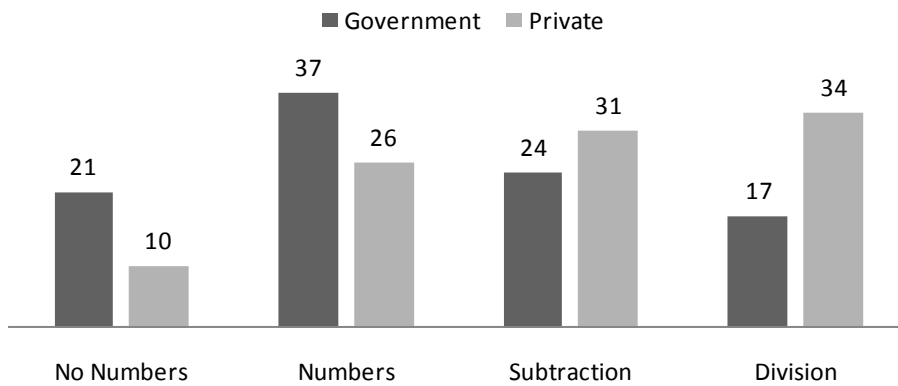


Fig. 6. Predicted Reading Scores by Standard of Living for Government and Private Schools

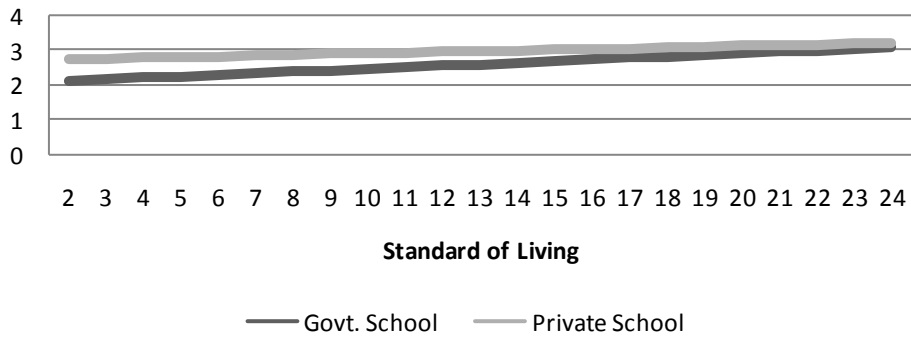


Fig. 7. Predicted Airthmatic Scores by Standard of Living for Government and Private Schools

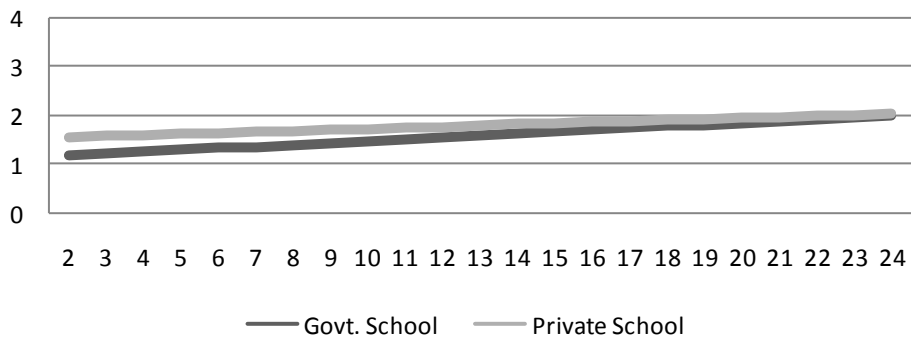


Fig. 8. Probability of Child Being Praised in the Last Month by Standard of Living

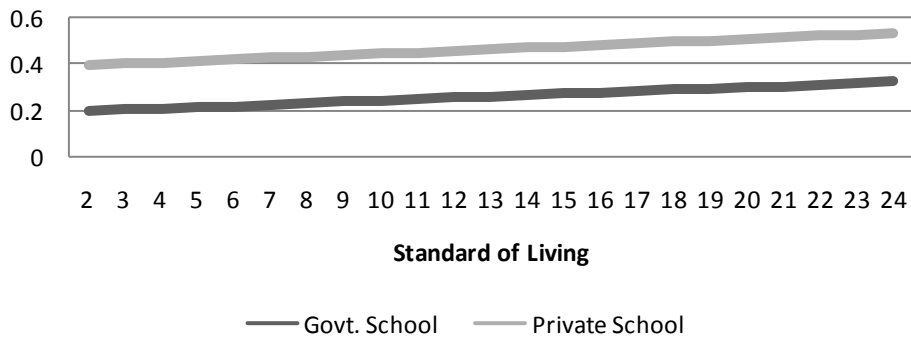


Fig. 9. Probability of Child Being Beaten in the Last Month by Standard of Living

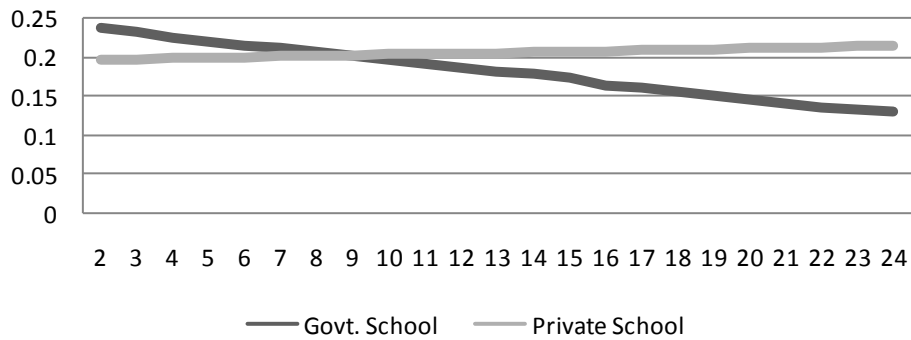


Table 1. Distribution of Type of Schools Attended for Enrolled Children 6-14

			Rural	Urban	All
School Type					
Government			76	42	68
EGS			1	1	1
Government			75	41	67
Private			24	58	32
Private Aided			4	8	5
Private			17	45	24
Convent			1	3	2
Madrassa			1	1	1
Other			1	2	1
Sample Size			24949	11776	36725

Table 2. Characteristics of Private and Public Schools in India		
	Government Schools	Private Schools
Percent teacher present in pchool	87.6	89.4
Percent teachers trained	85.9	43.8
Percent teachers with college degree	43.7	64.4
Percent students present In school	86.9	91.9
Some subjects taught in English+	26.8	51.1
English instruction begins in 1st standard	53.2	88.2
No. of classes meeting outside	0.7	0.3
No. of Mixed grade classrooms	0.9	0.6
Any toilet facility	60.9	78.3
Chairs/desk for all students	29.2	63.5
Blackboard in all classrooms	95.4	98.1
Computer available for student use	5.9	29.2
School has fans	28.4	63.3
Kitchen for cooked meals	41.3	10.8
Cook employed by school	74.9	11.1
Any teaching material on the wall	77.3	78.9
Children's work on the wall	67.6	73.9
N of Schools Surveyed	2034	1748
+ Many schools teach some subjects in English and others in vernacular languages		
* IHDS selected one predominant private and one government school per village/ urban block. The school sample is nationwide but not nationally representative.		

Table 3. Sample Distribution, Private Schooling and Skill Levels by Background Characteristics

	Proportion of Sample	Prop. In Private School	Prop. Able to read a para.	Prop. Able to to Subtract
Gender				
Male	0.53	0.33	0.57	0.51
Female	0.47	0.29	0.54	0.46
Place of Residence				
Metropolitan	0.05	0.58	0.69	0.72
Other Urban	0.19	0.58	0.69	0.62
Developed Village	0.34	0.29	0.55	0.48
Less Developed Village	0.42	0.17	0.48	0.41
Household Income Quintile				
Poorest	0.18	0.16	0.45	0.38
Second	0.22	0.17	0.47	0.4
Third	0.22	0.26	0.51	0.45
Fourth	0.20	0.39	0.62	0.54
Affluent	0.18	0.59	0.73	0.69
Standard of Living Quintile				
Poorest	0.20	0.1	0.34	0.29
Second	0.22	0.16	0.47	0.37
Third	0.24	0.27	0.54	0.49
Fourth	0.20	0.44	0.69	0.6
Affluent	0.15	0.69	0.81	0.78
Socio Religious Group				
Forward Caste	0.19	0.43	0.71	0.64
Other Backward Classes (OB)	0.36	0.29	0.57	0.5
Dalit (Hindu, Sikh, Buddhist)	0.24	0.21	0.45	0.39
Adivasi (Any religion)	0.06	0.15	0.48	0.38
Muslim	0.13	0.38	0.46	0.42
Minority Religions	0.02	0.74	0.8	0.79
Max. Adult Education in HH				
Illiterate	0.24	0.16	0.37	0.31
1-4 std	0.09	0.14	0.48	0.38
5-9 std	0.35	0.26	0.55	0.47
10-11 std	0.14	0.45	0.66	0.61
high sec & some coll	0.08	0.53	0.72	0.66
College graduate	0.09	0.63	0.8	0.75

Table 4. Private Schooling and Skill Levels by State			
	Proportion in Private School	Proportion able read a paragraph	Proportion able to Subtract
All India	0.31	0.55	0.49
Jammu and Kashmir	0.46	0.41	0.61
Himachal Pradesh	0.18	0.84	0.69
Uttarkhand	0.34	0.63	0.47
Punjab	0.52	0.67	0.73
Haryana	0.44	0.66	0.63
Delhi	0.31	0.77	0.72
Uttar Pradesh	0.44	0.40	0.34
Bihar	0.18	0.47	0.48
Jharkhand	0.37	0.61	0.61
Rajasthan	0.32	0.57	0.44
Chhatisghar	0.19	0.62	0.37
Madhya Pardesh	0.29	0.47	0.33
North East	0.54	0.60	0.78
Assam	0.09	0.75	0.46
West Bengal	0.12	0.52	0.58
Orissa	0.08	0.59	0.51
Gujarat	0.20	0.65	0.43
Maharashtra/Goa	0.29	0.66	0.54
Andhra Pradesh	0.29	0.50	0.51
Karnataka	0.27	0.53	0.55
Kerala	0.61	0.82	0.60
Tamil Nadu	0.42	0.80	0.72

Table 5. Sample Distribution, Private Schooling and Skill Levels by Instruments for P

	Prop. of Sample	Prop. in Priv. School	Prop. able to read a para.	Prop. able to subtract
Know any medical personnel				
No	0.67	0.27	0.52	0.45
Yes	0.33	0.39	0.61	0.56
Know any Govt. workers				
No	0.68	0.26	0.51	0.45
Yes	0.32	0.41	0.64	0.58
Private Primary School in Village/town (all towns=yes)				
No	0.50	0.15	0.51	0.43
Yes	0.50	0.47	0.6	0.55
Local Govt. School has a Cook				
No	0.37	0.4	0.57	0.53
Yes	0.63	0.26	0.54	0.46
Local Govt. School teaches English in KG/Std 1				
No	0.58	0.34	0.52	0.46
Yes	0.42	0.26	0.6	0.53
English as a Medium of Instr. In Local Govt. School				
No	0.83	0.31	0.54	0.47
Yes	0.17	0.28	0.63	0.56
School Survey Missing for Village/Block				
No	0.84	0.27	0.54	0.48
Yes	0.16	0.5	0.6	0.52

**Table 6. Impact of Excluded Variables on Enrollment in Private Schools
Results from the First Stage of Switching Regression Model**

	Coef.		Z Value
Know anyone in Medical Profession	0.24	**	5.6
Know anyone in Government	0.27	**	6.61
Private Schools Available in Village	0.92	**	21.69
Cook in Local Govt. School	-0.08	*	-1.88
Early English in local govt. school	-0.08	*	-1.94
Instr. In English in local govt. school	0.07		1.56
Missing school schedule	0.34	**	5.29
Constant	-1.18		-19.65
N of cases	11667		
Chi Square (7 df)	704		
*** p<0.01, ** p<0.05, * p<0.1			

Table 7. Impact of private school enrollment on reading and arithmetic skills						
	Reading Skills			Arithmetic Skills		
	1	2	3	1	2	3
	Basic	Switching	Family	Basic	Switching	Family
	OLS	Regression	Fixed Effect	OLS	Regression	Fixed Effect
Residence (Metro Omitted)						
Other Urban	0.163***	0.161***		0.112**	0.108**	
Developed Village	0.179***	0.171**		0.092*	0.078	
Less developed village	0.176**	0.167**		0.101**	0.082	
Socio Religious Group (Forward caste omitted)						
Other Backward Classes (OBC)	-0.051	-0.051		-0.054*	-0.055*	
Dalit	-0.222***	-0.222***		-0.222***	-0.222***	
Adivasi	-0.104*	-0.104*		-0.124***	-0.125***	
Muslim	-0.231***	-0.231***		-0.241***	-0.242***	
Other Minority Religions	-0.101	-0.102		-0.0602	-0.062	
Maximum Household Education (None omitted)						
1-4 std	0.147**	0.147**		0.037	0.038	
5-9 std	0.186***	0.187***		0.110***	0.111***	
10-11 std	0.338***	0.338***		0.252***	0.253***	
high sec & some coll	0.387***	0.389***		0.302***	0.305***	
College graduate	0.417***	0.419***		0.388***	0.390***	
Log of hh. annual income	0.001	0.001		0.006	0.006	
Score on Std. of Living Scale	0.034***	0.035***		0.031***	0.031***	
No of persons in the hh	-0.0237***	-0.024***		-0.019***	-0.019***	
No. of children < 15 in the hh.	-0.00504	-0.005		0.004	0.003	
Female Child	-0.100***	-0.100***	-0.07	-0.157***	-0.156***	-0.179***
Current Standard	0.341***	0.341***	0.229***	0.247***	0.247***	0.183***
Age of the child	0.025	0.025	0.164***	0.037***	0.037***	0.123***
In Private School	0.392***	0.362**	0.307***	0.280***	0.221**	0.224***
Constant	0.497**	0.513**	1.482***	0.148	0.179	0.879***
R-squared	0.337		0.286	0.355		0.287
Chi Square (42 df)		3954			4782	
Observations	11667	11667	11667	11619	11619	11619
*** p<0.01, ** p<0.05, * p<0.1						
Regressions also include controls for states						

Table 8. Pred. reading scores for children in private and government schools by state

	Unadjusted		Adjusted		Diff
	Reading Score		Govt.	Private	Priv-Govt
North East	2.57		2.78	2.49	-0.29
Maharashtra/Goa	2.83		2.77	2.55	-0.21
Tamil Nadu	3.17		2.03	1.84	-0.20
Delhi	3.09		2.79	2.69	-0.09
Haryana	2.88		2.73	2.65	-0.08
West Bengal	2.45		2.83	2.91	0.09
Gujarat	2.79		2.62	2.76	0.14
Kerala	3.29		3.70	3.87	0.17
Chhatisghar	2.81		2.91	3.10	0.19
Orissa	2.65		2.67	2.95	0.28
Karnataka	2.50		2.35	2.64	0.29
Himachal Pradesh	3.43		3.13	3.48	0.35
Rajasthan	2.52		2.43	2.89	0.46
Andhra Pradesh	2.40		2.21	2.68	0.47
Punjab	2.94		2.46	3.00	0.54
Jharkhand	2.58		2.73	3.27	0.55
Assam	2.84		2.97	3.52	0.56
Madhya Pardesh	2.31		2.36	2.99	0.63
Uttar Pradesh	2.02		2.03	2.72	0.69
Uttarkhand	2.74		2.53	3.24	0.72
Bihar	2.31		2.72	3.48	0.76
Jammu and Kashmir	2.37		2.03	2.85	0.82

App. Table 1: Proportion of 8-11 year olds tested	
All India	0.72
Place of Residence	
Metro City	0.69
Other Urban	0.76
More Developed Village	0.71
Less Developed Village	0.72
Socio Religious Group	
Forward Caste Hindu	0.78
Other Backward Classes	0.73
Dalits	0.74
Adivasis	0.66
Muslim	0.66
Christian	0.68
Maximum Adult Education in HH	
0 years	0.65
1-4 std	0.70
5-9 std	0.74
10-11 std	0.77
Higher Secondary/Some Coll	0.78
College Graduate	0.77
Household Income Quintile	
Poorest	0.71
Second	0.72
Third	0.73
Fourth	0.71
Affluent	0.75
Standard of Living Quintiles	
Poorest	0.67
Second	0.71
Third	0.75
Fourth	0.74
Affluent	0.76
Child Gender	
Male	0.73
Female	0.72
Type of School	
Not Enrolled	0.39
Government School	0.78
Private School	0.78

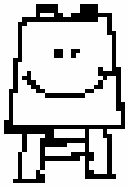
Appendix Table 2. Interaction effect of standard of living and private school enrollment on children's reading and arithmetic skills, likelihood of being praised and being beaten							
	Reading		Arithmetic		Praised		Beaten
Standard of Living	0.043 ***		0.035 ***		0.022 ***		-0.013 **
Private School Enrollment	0.654 ***		0.364 ***		0.628 ***		-0.123
Private * Standard of Living	-0.023 ***		-0.012 ***		-0.006		0.016 **
*** p<0.01, ** p<0.05, * p<0.1							
Regression includes all variables in Table 7, Model 2							



गणित

डाल 2004 ; 1 ब्र

1		2		3
36	72	$\begin{array}{r} 56 \\ - 38 \\ \hline \\ \hline \end{array}$	$\begin{array}{r} 74 \\ - 56 \\ \hline \\ \hline \end{array}$	$7 \overline{)468}$
64	48	$\begin{array}{r} 46 \\ - 18 \\ \hline \\ \hline \end{array}$	$\begin{array}{r} 75 \\ - 37 \\ \hline \\ \hline \end{array}$	$5 \overline{)275}$
33	76	$\begin{array}{r} 63 \\ - 47 \\ \hline \\ \hline \end{array}$	$\begin{array}{r} 94 \\ - 65 \\ \hline \\ \hline \end{array}$	$8 \overline{)496}$
45	81	$\begin{array}{r} 84 \\ - 68 \\ \hline \\ \hline \end{array}$	$\begin{array}{r} 84 \\ - 46 \\ \hline \\ \hline \end{array}$	$3 \overline{)174}$
पाँच पृष्ठो (4/5) संख्या 5 में से 4 पहचान होनी चाहिए।		दो करो। (2/2) 2 में से दोनों ही सही होने चाहिये।		एक करो। (1) किया हुआ भाग का सवाल सही होना चाहिए।



LEARNING TO READ LANGUAGE (Level 1)



Alphabets

k

P

r

S

t

D

h

n

M

b

Words

Cat

Ball

mat

water

boy

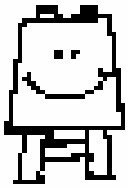
road

Put

my

Come

make



LEARNING TO READ

LANGUAGE (Level 1)



Story

When Rita was going home it started raining. Her friend Minu saw her. Minu said to Rita, Rita it is raining hard. Come with me to my house. When it stops raining you can go home. Rita went to Minu's house.

Paragraph

Animals live in the forest. Lion is the king of the forest. But when the lion comes, they all run away.

Paragraph

Jaipur is a large city. It has a famous palace. Ajmer is another city near Jaipur. People go for vacation there.