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**Hamna Ahmed, Sahar Amjad, Masooma Habib  
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**Centre for Research in Economics and Business  
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# **Determinants of School Choice: Evidence from Rural Punjab, Pakistan**

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## **Preface**

The Centre for Research in Economics and Business (CREB) was established in 2007 to conduct policy-oriented research with a rigorous academic perspective on key development issues facing Pakistan. In addition, CREB (i) facilitates and coordinates research by faculty at the Lahore School of Economics, (ii) hosts visiting international scholars undertaking research on Pakistan, and (iii) administers the Lahore School's postgraduate program leading to the MPhil and PhD degrees.

An important goal of CREB is to promote public debate on policy issues through conferences, seminars, and publications. In this connection, CREB organizes the Lahore School's Annual Conference on the Management of the Pakistan Economy, the proceedings of which are published in a special issue of the *Lahore Journal of Economics*.

The CREB Working Paper Series was initiated in 2008 to bring to a wider audience the research being carried out at the Centre. It is hoped that these papers will promote discussion on the subject and contribute to a better understanding of economic and business processes and development issues in Pakistan. Comments and feedback on these papers are welcome.



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## **Abstract**

The objective of this study is to understand why parents in rural areas choose low-cost private schools when free public schools are available. The study employs data from the Privatization in Education Research Initiative (PERI) School Choice Survey, 2011. The sample under study comprises 5–18-year-old children enrolled in private or public schools at the primary, secondary, or high school level in eight rural tehsils across Punjab, Pakistan. Our methodology entails specifying a probability choice model to understand what determines school choice in a rural setting. The variable of interest is parents' perceptions of their child's competence, the quality of the child's school, and the employment opportunities available to the child. The model also controls for a range of child-, parent-, and household-specific characteristics. Five main factors emerge as important determinants of private school choice. These include the socioeconomic status of the household, the degree of a school's accessibility, the cost of schooling, parents' perceptions of school quality, and their perceptions of the available employment opportunities in the region.

**Keywords:** School choice, private, public, perceptions, school quality, employment opportunities, wealth, access, cost of schooling, Punjab, Pakistan.

**JEL classifications:** I21, I25, O12.



# Determinants of School Choice: Evidence from Rural Punjab, Pakistan

## 1. Introduction

Many developing countries have experienced a surge in low-fee private schooling in response to the inadequate supply and low standard of government schools (Muralidharan & Kremer, 2008)<sup>1</sup>—Pakistan is no exception. With shrinking education budgets and weak commitment to education reforms, there is increasing demand for private schooling among the rural poor. Up to 15 percent of school age enrolments in rural Pakistan are in private schools. Punjab has the highest proportion of rural private enrolments at 23 percent while Sindh and Balochistan have the lowest rate of private enrolment (see Table A1, Appendix A).

Pakistan is also an outlier in terms of gender gaps in education. There was a 15 percent pro-male bias in gross enrolment at the primary level and 7 percent at the secondary level in 2009. Comparator countries have been much more successful in improving primary and secondary female enrolment rates.<sup>2</sup> However, trends in private enrolment in Pakistan show a high representation of girls, especially at the primary level and in Punjab, indicating that private schools may be catering especially to the dearth of satisfactory public schools for girls.

Under Article 25A of the 18th Amendment to the country's constitution, education is a fundamental right of every school-age child in Pakistan. The current bleak educational status of the country indicates that guaranteeing this right remains an important challenge. Pakistan's gross enrolment rates in 2009 of 85, 33, and 6 percent at the primary, secondary, and tertiary levels are the lowest in South Asia, and this low ranking has persisted for over ten years (World Bank, 2010). Moreover, public expenditure on education has been declining rather than increasing (from 2.2 percent in 2005/06 to 2 percent in 2009/10) (Pakistan, Ministry of Finance, 2010).

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<sup>1</sup> In comparison, in most developed countries, the substantial public investment in education means that private school enrolments amount to only about 3 percent of total enrolments (Checchi & Jappelli, 2004).

<sup>2</sup> The gender gaps in enrolments for Pakistan relative to other South Asian countries are given in Table A2, Appendix A.

Since many Pakistani parents have the option of private schooling available to them, it is important to study how private schools respond to parents' demand for education. A host of child-, household-, and school-specific factors are expected to influence parents' decision to send their children to either a private or public school. Analyzing these factors would help explain why parents with limited resources are willing to incur expenditures on private schooling for their children when free public schools are available. Identifying factors that can explain the rationale for parents' schooling decisions could help design policies aimed at improving the quality of public and private schools.

### 1.1. Main Research Questions

This study addresses the following overarching question: Why do parents choose low-cost<sup>3</sup> private schools when free public schools are available? Our main emphasis in answering this question is on the role of parents' perceptions in school choice while controlling for a range of child-, household-, and school-specific characteristics.

The existing literature on the topic argues that school choice behavior can be driven by demand-side determinants, supply-side determinants, or both. The former entails child-specific characteristics (such as age, gender, and intelligence), parent-specific characteristics (education and awareness) and household-specific characteristics (income and wealth). Supply-side factors typically include school-specific characteristics, such as schooling quality, distance to a school, and type (i.e., whether it is English-medium, private or public, co-educational or single-sex). Although the education literature discusses demand-side and supply-side factors at length, it does not focus on parents' perceptions of the alternative options available to them in making school choices.

This study departs from the existing literature by exploring the role of parents' perceptions in shaping school choice behavior. Thus, we use perceived indicators of child and school quality rather than actual measures (for instance, parents' assessment of their children's and teachers' competence levels rather than actual IQ or academic

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<sup>3</sup> In a nationwide census of private schools in 2000, the fee in median rural private schools was PKR 60 per month (50 percent of all private schools charge lower fees). According to Andrabi, Das, Khwaja, Vishwanath, and Zajonc (2007), "the overall cost of educating a child in the median rural private school was Rs. 1,000 or \$15 a year."

measures) since notions of school and teacher quality, children's capabilities, and employment opportunities may form an important basis for defining the value of education in parents' eyes and in choosing a school for their children.

The rural poor have the least access to schooling, and this study looks at the extent to which private and public school alternatives exist for children from low-income rural households. In cases where such a choice exists, it also identifies which prominent factors influence the preference for private schooling relative to existing public schools.

Another important objective of the study is to compare trends in school choice by schooling level and by gender. While earlier studies have focused mostly on school choice at the primary level, parents' expectations from educational investment in children may differ across schooling levels and, therefore, we include parents' perceptions with regard to all school-age children. It is also important to study variations in school choice by gender since lagging enrolments among girls makes investment in female education an especially important issue.

The objective of this exercise is to use basic regression analysis in an attempt to understand how parents' perceptions of their child and the quality of his/her school are related to their choice of school rather than to estimate the causal impact of parents' perceptions on school choice behavior. Given the dearth of literature on the role of parents' perceptions on school choice behavior, such a study will likely be informative in its own right.

The study draws on primary data, specifically the Privatization in Education Research Initiative (PERI) School Choice Survey, which was conducted in selected rural *tehsils*<sup>4</sup> across Punjab in April 2011. The survey was conducted by the Lahore School of Economics in collaboration with the Punjab Bureau of Statistics, using the sampling frame employed by the 2007/08 Multiple Indicator Cluster Survey (MICS). The survey covered 1,024 households and 257 schools. Detailed information about the survey and sampling methodology is given in Section 2.

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<sup>4</sup> Pakistan comprises four provinces: Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan. Each province consists of divisions, and each division is subdivided into districts. Each district is further divided into *tehsils* or *talukas*. For the purposes of revenue collection and administration, tehsils are subdivided into *patwar* circles and *mauzas*, which are further divided into villages in rural areas. Thus, a tehsil is an administrative subunit of a district.

The scope of this study is limited to selected tehsils within Punjab. Of the four provinces, we have chosen Punjab on two accounts: (i) the spread of private schooling has been most widespread in Punjab compared to the other provinces—almost one fourth of all school-going children in the 5–18-year age bracket are enrolled in private schools in Punjab compared to one fifth in Khyber Pakhtunkhwa (KP) and one twentieth in Sindh and Balochistan (Table A2, Appendix A); (ii) Punjab is the largest province in terms of population and therefore representative of education trends at the national level.

The document is organized as follows: The rest of Section 1 gives a brief background of the state of private and public education in Pakistan, especially rural Punjab, and discusses the literature supporting the research. Section 2 describes the PERI survey and data collection methods used. Section 3 describes the PERI dataset. Section 4 discusses the research methodology used to analyze the data. Section 5 presents our results, and Section 6 concludes and summarizes the study's main findings.

## 1.2. Private Schooling in Rural<sup>5</sup> Pakistan

This section gives an overview of the overall state of public and private education in rural Pakistan, as illustrated by the Pakistan Social and Living Standards Measurement (PSLM) survey.<sup>6</sup> The sample under study comprises children in the 5–18-year age bracket. From this point onward, all statistics reported refer to children in this age bracket residing in rural areas.

In rural Pakistan, only 54 percent of children are enrolled in school—whether private, public, community, nongovernment organization (NGO), or trust-run schools, or in *madrassas* (religious seminaries).<sup>7</sup> This implies one out of every two children is out of school in rural Pakistan. Female indicators are even worse: compared to boys, a greater

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<sup>5</sup> The sampling frame of the rural domain consists of a list of villages/*mauzas/dehs* prepared during the 1998 population census, according to which all localities with large population agglomeration (and which were either metropolitan corporations, municipal corporations, municipal committees, town committees, or cantonments) were treated as urban while all other areas were treated as rural.

<sup>6</sup> The PSLM survey is based on urban and rural areas in Pakistan, which have been classified according to the definition above. For the purposes of calculating the numbers reported here, the PSLM sample was restricted to the rural subsample.

<sup>7</sup> While it would be interesting to identify the share of children attending low-fee private schools within the pool of private school-going children, the data unfortunately allows us to determine only the overall private school-going sample.

percentage of girls are out of school. More precisely, a gender gap of 21 percent (between the male and female enrolment rate) prevails in the schooling decision (Table A2, Appendix A).

Traditionally, private education has been considered the prerogative of rich urban dwellers. A private–public sector-disaggregated analysis of enrolment rates in rural Pakistan, however, suggests that this notion is misleading. Private schooling is important not just for the rich—it also plays an important role for the poor strata of the population residing in rural Pakistan.<sup>8</sup> While the public sector is the main provider of education services, the role of private schooling appears to be substantial—almost 15 percent all children are enrolled in private schools in rural Pakistan (Table A2, Appendix A).

While enrolment in private schools has increased, the spread of private schooling has been uneven across the country. Across the four provinces, private school enrolment is most widespread in Punjab—approximately 23.4 percent of all school-going children in the province attend private schools as opposed to 17 percent in KP (Table A2, Appendix A). Private school enrolment is, however, much more limited in Sindh and Balochistan, where the public sector remains the main supplier of education services.

Within Punjab, the spread of private schooling has also been uneven. A far greater percentage of children attend private schools in the northern and central parts of the province compared to its southern and western parts (Table A3, Appendix A).

Incorporating the gender dimension reveals that, relative to males, females are more likely to receive private schooling<sup>9</sup> in rural Pakistan. The inter-provincial numbers show that this trend is driven largely by Punjab (Table A2, Appendix A). An analysis by socioeconomic status shows that this is true for all quintiles except for the top 20 percent of

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<sup>8</sup> We have divided the sample of households under study into quintiles on the basis of a wealth score (see Section 4 for details of how this score was calculated). The bottom 20 percent of households with the lowest wealth score represent the poorest segment of the population while the top 20 percent of households with the highest wealth score represent the richest segment of the population.

<sup>9</sup> Private schooling refers to enrolment in a private school and does not include home schooling or tutoring.

the population, where both males and females have an almost equal chance of attending a private school (Table A4, Appendix A).

### 1.3. Background Literature Review

This section discusses factors that could define school- and child-“quality” aspects, and household background issues important in prompting parents’ schooling choices.

#### *1.3.1. Growth of Private Schooling: Access and Coverage*

During 2000–05, private school enrolment in Pakistan is estimated to have increased at 62 percent compared to 17 percent in public schools (Andrabi, Das, Khwaja, Vishwanath, & Zajonc, 2007). The rapid growth of private schools is also evident in other developing countries. Srivastava (2007) points out that Uttar Pradesh, one of the most educationally backward states in India, has a private school enrolment rate of 57.6 percent—the second highest in the country. Muralidharan (2006) notes that nearly 30 percent of the rural population in India “can access a fee-charging primary private school in the same village.” The rise of private schooling is also a growing phenomenon in some Latin American countries—nearly a fifth of all students at the primary and secondary level in Bolivia were enrolled in private schools (Psacharopoulos, Arieira, & Mattson, 1997).

The education literature indicates that private schools in developing countries including Pakistan do not necessarily have an elite bias, and that a range of low fee-charging schools exist that cater to the rural poor. Several characteristics may be responsible for making private schooling more attractive to parents compared to government schools; these include better test scores, the use of English as a medium of instruction, better physical infrastructure, and lower rates of teacher absenteeism (Harlech-Jones, Baig, Sajid, & Rahman, 2005; Rehman, Khan, Tariq, & Tasleem, 2010; Srivastava, 2007; Das, Pandey, & Zajonc, 2006; Muralidharan, 2006).



### 1.3.2. *School and Teacher Quality Factors Influencing School Choice*

#### *Lower teacher absenteeism and better teacher accountability in private schools*

In the private sector, teacher remuneration is more closely linked to student outcomes than in the public sector, and failure to meet certain standards can result in dismissal.<sup>10</sup> Muralidharan (2006) shows that, in India, “private school teachers are 2 to 8 percentage points less likely to be absent than teachers in public schools.” So, teachers operating at low-fee private schools would be under pressure to perform and meet certain result-oriented outcomes. In the public sector, on the other hand, there is greater job security. Thus, the differential incentive package in the private relative to the public sector may be a factor in explaining why private schools out-perform government schools.

#### *Availability of local female secondary school graduates*

Andrabi, Khwaja, and Das (in press) have argued that an efficient market for low-fee private schools exists mainly due to a pool of unemployed, secondary school-educated women who make effective primary teachers. According to Andrabi, Das, and Khwaja (2010), the establishment of private primary schools in rural Punjab may depend on the existence of government girls’ secondary schools in the area. Owners of private schools employ women who have completed their secondary education as teachers, and since these local young women have very few income earning options, they can be hired at low wages. Another advantage of hiring teachers that belong to the village where the school is based is that they are likely to have lower absenteeism levels than teachers hired from outside the village (Lloyd, Mete, & Sathar, 2005).

#### *English as a medium of instruction*

The research indicates that most learning gaps exist due to variations in quality across schools; the learning gap between Pakistan’s public and

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<sup>10</sup> Bari (2011) argues that most appointments of public schoolteachers take place through “patron–client” networks, and the rewards of these teachers are not tied to performance. In fact, public schoolteachers are frequently deployed during census, election, and vaccination duties, and may not even bother coming to school.

private schools in rural areas is highest for English (Das et al., 2006). Harlech-Jones et al. (2005) suggest that the use of English as a medium of instruction in private schools is critical in parents' school choice. Given that knowledge of English may be important in obtaining certain types of employment, such as in the civil service and army, parents are likely to be attracted to the availability of English as a medium of instruction in private schools. Other studies also suggest that parents might pay less attention to a school's curriculum, but nonetheless opt for it if it is branded "English-medium" (Siddiqui, 2007).

*Private schools: Higher test scores, smaller classes, and better infrastructure*

According to Andrabi et al. (2007), primary students' test scores in Punjab were higher among private than public school children. Das et al. (2006) show that the gap in test scores for third-grade English between private and public schools in selected districts in Pakistan was 12 times greater than the test score gap between children from wealthier and poorer families. In a study on India, Srivastava (2007) explains that most households perceived that low-fee private schooling was a prerequisite for entry into the labor market. High test scores from private schools may serve as a more effective signal for future employers, and parents might perceive private schools as being better equipped to provide their children with the necessary skills to secure improved future employment prospects.

Lloyd et al. (2005) point out that private schools have more teachers and smaller classes, which reduces the teaching load for a given teacher. Differences in infrastructure in private versus public schools can also influence school choice. The literature also reports that amenities such as boundary walls and latrines can have a positive influence in determining parents' schooling decisions for their children, especially for their daughters (World Bank, 1996; Annual Status of Education Report, 2010).

*1.3.3. Household- and Child-Related Factors Influencing School Choice*

*Household income/wealth and the cost of schooling*

Several studies show family income to significantly affect child enrolment (Andrabi et al., 2007; Alderman, Orazem, & Paterno, 2001; Sathar &

Lloyd, 1994; Burney & Irfan, 1995; Lloyd et al., 2005). It is important to recognize that even if public schools are free, parents still incur a certain cost in sending their child to school (Alderman et al., 2001). The cost of uniforms, books, and stationery coupled with the opportunity cost of not having the child there to help with household chores makes family income an important determinant of school enrollment.<sup>11</sup> The cost of schooling is an important barrier that may prevent a child from being enrolled in a private school. If the total cost of schooling comprises all expenditures including the schooling fee, tuition fee, pocket money, and cost of uniforms, books, and transport, then lower-cost private schools could have a cost structure similar to that of public schools.

Andrabi et al. (2007) show the median rural private school charges a fee as low as PKR 60 per month (less than USD 1), indicating that, in terms of cost, private schools are expected to compete effectively with public schools. In order to stay competitive, their study shows that private schools earn very low profits (PKR 14,000 per year). In another study by Muralidharan (2006), the monthly revenue of a private school in India was INR 4,000 per month on average and the median fee was INR 63 per month. So it appears that, to be viable and competitive in the rural context, private schools sacrifice profits in order to gain a competitive advantage over rival public schools.

### *Effect of parents' education*

Another attribute that strongly affects child enrolment and school choice is parents' education (Iram, Hussain, Anwar, Hussain, & Akram, 2008; Lloyd et al., 2005). One channel through which this affects school choice is that an educated parent has a better chance of assessing a school's quality (Andrabi, Das, & Khwaja, 2002). In their study of 290 schools in India, Dreze and Kingdon (2001) show that parental education emerges as a strong predictor of school attendance, with intergenerational same-sex effects being stronger than cross-sex effects. This implies that having educated mothers will have a deeper impact and should result in more girls being educated over time. Regarding school choice, we should expect that better educated parents will send their children to private schools rather than public schools if they perceive the former to be of higher quality.

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<sup>11</sup> However, family income may not be an indicator of school choice in cases where very poor families invest in the education of exceptionally talented children based on the belief that enrolment in a private school can improve employment prospects (Andrabi et al., 2007).

### *Distance to school*

Studies on Pakistan show that parents are likely to be more comfortable sending their sons, rather than their daughters, to a school that is on the outskirts of the village (Lloyd, Mete, & Grant, 2009; Andrabi et al., 2007). However, the presence of an elder male sibling could mitigate the “distance penalty” for a girl. Andrabi et al. (2007) point out that the actual impact of distance on school choice depends on the type of household making the decision. For instance, if the household is “quality conscious”, then they might even prefer sending their daughter to a private school that is 2 km away rather than a closer public school 500 m away.

### *Child and household characteristics*

The literature shows that even poor parents tend to opt for private schools, and that this “voting with their feet” phenomenon could lead to a marked divergence between the test scores obtained by public and private schools. It is likely that more intelligent children are enrolled in private schools and that the parents of private school-going children are more proactive in monitoring school results since they are paying fees. This selection bias coupled with greater monitoring by parents could lead to better test scores and results for private schools (Das et al., 2006; Muralidharan, 2006).

## **2. Survey and Data Collection**

### **2.1. The PERI Survey**

The PERI School Choice Survey was conducted in April 2011 by the Lahore School of Economics in collaboration with the Punjab Bureau of Statistics in seven rural districts of Punjab (one in northern Punjab, four in central Punjab, and two in southern Punjab).<sup>12</sup> A total of 1,024 households were surveyed in 64 clusters spanning over eight tehsils across seven districts. These households are a subsample of the households surveyed under the MICS for 2007/08, thus allowing the construction of a panel dataset.

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<sup>12</sup> The study uses the regional classification given for Punjab in Cheema, Khalid, and Patnam (2008).

## 2.2. Sampling Methodology

The MICS is conducted by the Government of the Punjab in collaboration with the United Nations Children's Fund and the Pakistan Bureau of Statistics. Its first round (2003/04), conducted by the Government of Punjab, was the first ever survey representative at the district level, while the most recent round (2007/08) is representative at the district and tehsil (subdistrict) levels.

The PERI survey's sampling methodology was defined according to this study's research objectives. The study, which focuses on rural Punjab, takes into account cross-regional variations. Punjab is geographically divided between northern, western, southern, and central Punjab. Since western Punjab was severely affected by floods at the time of the survey, it would not have been representative of normal conditions in the area and was thus excluded from the sample.

Simply excluding the urban tehsils that formed part of the MICS 2007/08 survey was not considered sufficient to represent rural households because some tehsils could be considered peri-urban. Accordingly, those with a rural population that was two standard deviations below the average rural proportion of Punjab were excluded from the target population. The PERI sample therefore excludes tehsils with a rural population that accounts for less than 32.5 percent of its total population.

Southern Punjab is, historically, a deprived region in terms of socioeconomic conditions and access to public services. Private enrolment is relatively low here compared to other parts of the province.<sup>13</sup> Therefore, southern Punjab was further divided into two regions on the basis of private school availability, using a private school enrolment threshold of 20 percent as a proxy for availability of choice. The main objective of this exercise was to avoid surveying a 'no choice' area since this would have defeated the study's objective of examining parents' school choice behavior between private and public schools.

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<sup>13</sup> For instance, according to the Annual Status of Education Report (2010), 25.3 percent of all children aged between 6 and 16 years old are enrolled in private schools in rural Faisalabad, which falls in central Punjab, and 25.7 percent are enrolled in private schools in rural Rawalpindi, which falls in northern Punjab. In contrast, only 14.1 percent of all children in this age bracket are enrolled in private schools in rural Rahimyar Khan in southern Punjab.

Having defined our target population in the rural regions of central, northern, and southern Punjab with  $< 20$  percent enrolment and in southern Punjab with  $\geq 20$  percent enrollment, the next step is to select a representative sample using an appropriate sampling technique. Our sampling approach entails multi-stage, stratified sampling, allocating a sample size that is proportional to the size of the stratum in the first stage. The second stage involves a simple random sampling approach with a probability proportional to size.

The details of the selected tehsils and the number of clusters surveyed in each during the MICS 2007/08 round are given below (Table 1). The table also shows the number of clusters sampled for the purposes of this study and the proportion of the sample.

**Table 1: Sample composition**

District	Tehsil/town	No. of rural clusters in MICS 2007/08	No. of selected clusters	Sample percentage
<i>Northern Punjab</i>				
Chakwal	Talagang	24	9	37.5
<i>Central Punjab</i>				
Hafizabad	Hafizabad	26	8	30.8
Faisalabad	Jinnah Town	15	5	33.3
Nankana Sahib	Sangla Hill	21	7	33.3
Jhang	Jhang	47	15	31.9
<i>Southern Punjab</i>				
Bahawalpur	Bahawalpur Sadar	42	7	16.7
Khanewal	Mian Channu	49	9	18.4
Bahawalpur	Khairpur Tamewali	21	4	19.0
Total		245	64	100.0

Source: Authors' calculations.

### 2.3. Survey Questionnaire

The survey questionnaire comprised three parts. Part I entailed collecting background information on 16 households in each cluster.<sup>14</sup>

<sup>14</sup> The refusal rate was low—only 0.6 percent of the households in our sample refused to be interviewed. However, 8.35 percent could not be surveyed either because they had migrated, could not be located, or because the respondents were not at home.

Part II consisted of questions addressed to parents on their school choice for children aged 3–18, and Part III collected information on private and public schools in each cluster.

Part I of the questionnaire asked for information on each household member, such as age, gender, marital status, relationship to the household head, literacy level (for individuals 10 years and above), income level, and health status. In order to gauge the household's wealth status, the questionnaire also collected information on various household characteristics, such as the type of dwelling (i.e., whether *kachha* or *pakka*,<sup>15</sup> area and value of house, etc.) ownership of possessions,<sup>16</sup> land ownership (area, value, and type, i.e., whether arid, barren, or irrigated, etc.), ownership of animals, access to utilities (gas, electricity, water), and additional sources of household income (remittances, transfers, pension benefits, etc.). For the purposes of creating a panel dataset, however, most of the modules in this part of the questionnaire were taken from the MICS 2007/08 questionnaires.

Part II of the questionnaire collected detailed information on all children ranging between 3 to 18 years of age (inclusive) in the surveyed households. The precondition for conducting this part of the questionnaire was that only a parent—either the child's mother or father—should be the respondent. In line with the survey's objectives, this part focused on parental perceptions of 1,856 children in terms of various dimensions of their schooling—the child's characteristics (whether s/he is hardworking and intelligent), the infrastructure and amenities at the child's school, teacher absenteeism and educational qualifications, and the school's academic quality. Other questions addressed the benefits of education and the employment opportunities available to the child as perceived by his/her parents. Additional information included school-switching behavior, physical access to schools, and expenditure incurred by parents on their child's education. The questionnaire also included modules on child labor and women's empowerment.

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<sup>15</sup> In this case, “*kachha*” refers to rudimentary floor construction while “*pakka*” refers to construction with brick, cement, marble chips, tiles, or marble.

<sup>16</sup> Such as a radio, television, cable television, mobile phone, computer, refrigerator, air conditioner, washing machine/dryer, fan/air cooler, cooking range, sewing/embroidery machine, iron, watch, animal-drawn cart, bicycle, motorcycle, car, or other vehicle, etc.

Part III of the questionnaire aimed to assess the supply of schooling and gathered information on public and private schools in the cluster. It surveyed school characteristics such as the medium of instruction, the number of teachers and their qualifications, total (in terms of class and gender) enrolment, and school infrastructure. The questionnaire also addressed aspects of the community, such as the presence of a factory and training institutions in proximity to gain an idea of the opportunities available to residents.

As mentioned earlier, in line with the survey's objectives, i.e., to assess the role of parents' perceptions in shaping school choice, a precondition for conducting the survey was that the child's parent (either the mother or father) should be the respondent. Therefore, children whose parents were not available were not sampled.<sup>17</sup>

### **3. Data Sources**

#### **3.1. The PERI Dataset**

The parents<sup>18</sup> of a total of 1,856 children between 3 and 18 years of age (inclusive) were surveyed,<sup>19</sup> of which 1,174 were enrolled in school at the time while 682 were out of school. For the rest of the paper, however, our working sample comprises 1,543 children between 5 and 18 years of age (inclusive),<sup>20</sup> of which 73 percent consist of children in the 5–14-year age bracket, while the rest fall in the 15–18-year age bracket. In terms of gender composition, 52 percent are male and 48 percent are female.

#### **3.2. Overview of PERI Sample: Public and Private Schooling**

As shown in Table 2, 33 percent of all children in the 5–18-year age bracket are currently out of school. Of these, 17.9 percent have never attended school while 15.4 percent are dropouts. The public sector is

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<sup>17</sup> About 19 percent of the parents sampled did not answer Part II of the questionnaire. To ensure that there was no systematic bias between parents who responded and those who did not, we tested differences in observable characteristics such as employment, education, and wealth, and found that there was no statistically significant difference between the two samples of parents.

<sup>18</sup> This yielded a total of 640 parents.

<sup>19</sup> Out of the total sample of children aged between 3 and 18 years old, 13 percent (233 children) were younger than 5. Of these, 28 percent were enrolled in school at the time.

<sup>20</sup> After dropping children below the age of 5 from the sample, 80 children were still found to be enrolled in preschool; they too were excluded from the analysis.



the main provider of education services in rural areas. Enrolment in madrassas and other types of schools is relatively low at 0.3 and 3.4 percent, respectively.

As the table shows, the private sector plays a significant role in providing education services in the area under study—almost 27 percent of all enrolled children currently attend private schools. The table also shows that private school enrolments are higher among females than males even though overall female enrolment is lower and the proportion of females who have never attended school is higher relative to males. Male enrolment is 9 percentage points higher than female enrolment in our sample. Moreover, compared to males, a much greater percentage of females are out of school (37.9 percent compared to 29.1 percent for males) either because they have never attended school or because they have dropped out.

**Table 2: Overall enrolment by gender and type of school (%)**

Gender	In school*	Out of school*		Type of school**			
	Enrolled	Never attended	Dropped out	Private	Public	Madrassa	Other
Overall	66.7	17.9	15.4	26.8	69.5	0.3	3.4
Males	70.9	15.1	14.0	23.9	72.9	0.2	3.1
Females	62.1	20.8	17.1	30.6	65.2	0.4	3.8

Notes: \* = percentage of children, \*\* = percentage of enrolled children. The ‘Other’ category includes foundation-assisted schools, trust-run schools, vocational, and technical training schools.

Source: PERI School Choice Survey (2011).

In terms of type and level of schooling,<sup>21</sup> Table 3 below reveals that private schools cater to all levels of schooling even in rural Punjab. One fourth of all enrolled children at the primary and middle levels attend private schools. What is interesting to note is that this proportion increases for high school, where one third of all enrolled children attend private schools. Thus, contrary to the commonly held view that private schools cater only to the primary level, the private sector appears to have a much broader outreach even in the rural areas of the province.

<sup>21</sup> It is worth mentioning that the gross and net enrolment rates will be different for each category since children attend a different level of school relative to their age bracket. For instance, 12.7 percent of children in the 5–9-year age bracket are enrolled in preschool while 1.8 percent are enrolled in middle school. Moreover, 44 percent of males and 35 percent of females in the 10–14-year age group are enrolled in primary school and 8 percent in high school.

An examination of the gender-disaggregated data shows that, for girls, private enrolment increases and public enrolment declines with the level of schooling. At the high school level, more than twice as many females as males attend private schools.

**Table 3: Gender-disaggregated enrolment patterns by level of schooling (%)**

Schooling level/gender	Type of school			
	(1) Private	(2) Public	(3) Madrasa	(4) Other
<i>Primary</i>	24.7	71.2	0.2	4.0
Males	24.1	71.4	0.0	4.6
Females	25.5	70.6	0.4	3.6
<i>Middle</i>	24.1	75.0	0.0	0.9
Males	17.3	82.7	0.0	0.0
Females	32.7	65.4	0.0	1.9
<i>High</i>	34.4	61.2	0.6	3.8
Males	22.3	74.5	1.1	2.1
Females	51.6	41.9	0.0	6.5

Note: The 'Other' category includes foundation-assisted schools, trust-run schools, and community schools.

Source: PERI School Choice Survey (2011).

Private and public enrolments, and the proportion of children out of school may be influenced by differences in parent-specific characteristics such as education levels, their awareness of education and their perceptions of the school in which their child is studying. To that end, Table 4 presents descriptive statistics for each of these categories.

The descriptive statistics given in Table 4 show that the parents of private school-going children are better educated than those of public school-going and out-of school children. The former have greater awareness of private education and perceive their children as more intelligent and hardworking than those parents whose children attend public schools. Moreover, the parents of private school-going children perceive their children's schools as being of higher academic quality, and having better teachers and better infrastructure.

**Table 4: Descriptive statistics by private school-going, public school-going, and out-of-school children\***

Descriptive statistic	Enrolled in private school	Enrolled in public school	Out of school
<i>Parents' awareness</i>			
Awareness of private schooling	7.78	5.72	5.03
<i>Parents' perceptions**</i>			
Child competence	6.76	5.83	n/a
Academic quality	7.15	5.85	n/a
Teacher quality	7.30	6.15	n/a
Infrastructure	9.30	8.63	n/a
Child safety	6.35	6.19	n/a
<i>Parents' factual</i>			
Average years of schooling (mother)	3.00	1.00	0.40
Average years of schooling (father)	6.00	4.00	2.00
<i>Household</i>			
Wealth index	2.42	1.95	1.70

Notes: \* The indices measuring parents' perceptions, awareness, and wealth were scaled to lie between 0 and 10 for comparability. \*\* The methodology used to construct the parents' perceptions variables is given in Box 1.

Source: PERI School Choice Survey (2011).

**4. Methodology**

This analysis seeks to answer the following question: Who sends their child to private schools and why do they choose private schooling over public schooling? The sample under study comprises 5–18-year-old children enrolled in private or public schools at the primary, secondary, or high school level.<sup>22</sup> Moreover, it is restricted to those children who have the ‘choice’ of being sent to a private school. For the purpose of our investigation, ‘choice’ is defined as affirmative if there was at least one child attending a private school in that cluster.<sup>23</sup>

<sup>22</sup> Children younger than 5 were dropped from the analysis.

<sup>23</sup> Eleven clusters were dropped from the analysis because of the absence of any choice—these were clusters without a private school.

Out of the initial working sample of 1,543 children, 254 were excluded because they belonged to a ‘no-choice’ area. This yielded a sample of 1,289 children, of which 889 were enrolled in school and 400 were out of school at the time. Out of the 889 children enrolled in school, 42 attended schools other than public or private schools (e.g., madrassas, or trust-run, foundation-assisted, or community schools), yielding a working sample of 847 children. Of this working sample of 847 children, 264 children were enrolled in private schools and 583 in public schools—520 (60 percent), 204 (24 percent), and 140 (16 percent) of these children were enrolled at the primary, middle, and high school level, respectively.

In order to answer the research question, we carry out our investigation in three stages. The first stage entails employing an aggregated approach to gain a broad overview of the determinants of school choice for the pooled sample. In the second step, we extend the analysis by undertaking two distinct types of disaggregation: the first at the gender level to capture differences in the private school enrolment of males and females, and the second at different levels of schooling to gauge how enrolment patterns in private schools change across the primary, middle, and high school tiers. Finally, in the third step, we ‘unbundle’ school quality by attempting to split the indices measuring school quality into their components and quantifying the impact of each factor on school choice across the three tiers of schooling.

Thus, to understand what determines school choice in a rural setting, our model incorporates a set of child-specific, parent-specific, and household-specific characteristics, along with an array of variables capturing the role of parents’ perceptions with regard to their child’s ‘quality’, the quality of the school he/she attends, and the employment opportunities available to the child. Accordingly, we specify the following probability choice model:

$$Prob(S_{ik} = 1 | PS, X) = \gamma + \sum_{n=1}^4 \beta_n (PS_{ikn}^p - PS_{ikn}^g) + \beta X + \varepsilon_{ik} \quad (1)$$

$S$  is a dummy variable that is equal to 1 if child  $i$  of parent(s)  $k$  is enrolled in a private school and 0 if the child is enrolled in a public school. The variable of interest is the parents’ perceptions of the child’s school ( $PS$ ). Since the objective is to study the attractiveness of private

schools relative to public schools, the variable of interest takes a differenced form to account for the ‘relativity’ aspect. Thus,  $PS_k^p$  measures parent  $k$ ’s perception of the quality of the private school in which child  $i$  is enrolled, while  $PS_k^g$  represents the perceived quality of public schools. Since it is a child-level analysis and the sample under study comprises only private- and public school-going children, if child  $i$  is enrolled in a private school, the counterfactual will refer to a public school and vice versa.

For all children going to school, the counterfactual is constructed using a tehsil-specific mean<sup>24</sup> of the perception of all parents whose children attend the alternative school type. For instance, if child  $i$  attends a private (public) school,  $PS_k^g(PS_k^p)$  will represent the mean perception of all parents in that tehsil of the quality of the public (private) schools in which their children are enrolled.

The quality of the school in which the child is enrolled is quantified along  $n$  various dimensions. These include the quality of subject teaching, the quality of the child’s class teacher, the school’s infrastructure, and the child’s safety at school. For each of these dimensions, we construct an index using principal component analysis (PCA)<sup>25</sup> due to the presence of high correlation among the individual elements (see Box 1 for further details on each of these indices).

$X$  is a vector of child-specific, parent-specific, and household-specific controls. It includes the child’s gender (equal to 1 for males and 0 for females), competence level, mother’s education and father’s education (given by the number of years of schooling completed), parents’ awareness of private schooling, total number of children in the household, and household size.

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<sup>24</sup>Another possibility would have been to use cluster-specific means instead. However, since our variables of interest—parents’ perceptions—take a differenced form, and given the cluster’s small geographic size, using cluster means might not have allowed greater variation in the independent variables. We have, therefore, employed tehsil-specific means for all perception variables.

<sup>25</sup>To make all the perceptions indices (generated by means of PCA) comparable, they were rescaled to lie between 0 and 10.

**Box 1: Indices measuring parents' perceptions of school quality**

*Quality of subject teaching.* This index is based on how parents rate the teaching of mathematics, English, and science in their child's school on a scale of 1 to 3, where 1 refers to poor and 3 refers to excellent.

*Teacher quality.* This index is based on the quality of the class teacher's teaching and captures three dimensions: (i) parents' knowledge of the teacher's educational qualifications, (ii) their opinion of the teacher's regularity, and (iii) their rating of the teacher's teaching skills on a scale of 1 to 4, where 1 refers to poor, 2 to average, 3 to above average, and 4 to excellent.

*School infrastructure quality.* This index is based on five measures: (i) parents' observations about the condition of the school building, and their knowledge of whether the school has (ii) a boundary wall, (iii) a functional latrine, (iv) electricity, and (v) water.

*Child safety.* This index is based on parents' knowledge of whether the child's school has a gatekeeper, and on their perceptions of the frequency of corporal punishment and the likelihood of peer harassment.

Further details on each of these indices, the variables on which each index is based, and the manner in which each of those variables has been measured are given in Table A5, Appendix A.

These indices of child competence and school quality are included in both parts of the sample analysis in order to compare the results yielded by the overall sample to those obtained from the gender- and level of schooling-disaggregated samples.

The child competence index is obtained through PCA and is based on (i) parents' rating of their child's intelligence, and (ii) their opinion of how hardworking the child is both academically and in daily life. For both questions, parents rate the child on the following scale: below average, average, or above average.

The index measuring parents' awareness quantifies child *i*'s parents' awareness of private schooling. As with the indices measuring child competence and school quality, we use PCA to construct this index, which is based on various indicators that may reflect the extent to which child *i*'s parents are aware of private schools. These indicators include whether the parent (i) has ever visited a private school, (ii) knows of anyone (apart from his/her own children) who studies or has studied at a private school, (iii) knows of a private school in the village, and (iv) knows

of a private school in another village or area. It is expected that parents will generally be aware of public education, given the wide availability of government schools. Private schools being a more recent phenomenon and relatively few compared to public schools, parents will only actively seek information on private education if they are interested in sending their child to a private school. To test this, we examine how parents' awareness of private schooling affects their choice of school.

In order to incorporate the household's socioeconomic status into  $X$ , we include the household's total income as reported by various sources. Income being a noisy measure, we have chosen to construct a wealth index using information on household goods and amenities<sup>26</sup> (Box 2). Furthermore, wealth quintiles for the household are computed from the distribution of the wealth index.

#### **Box 2: The wealth index**

The wealth index is employed as a measure of the household's socioeconomic status, using PCA. The variables used to construct the index include: number of rooms per person; material used to construct walls, roof, and floor of dwelling; availability of electricity and gas; type of cooking fuel used; and ownership of consumer durables (radio, television, cable television, telephone, mobile telephone, computer, Internet, refrigerator, air conditioner, washing machine/dryer, air cooler/fan, cooking range/microwave oven, sewing machine, iron, water filter, watch, bicycle, motorcycle, car, and animal-drawn cart).

$X$  also consists of the distance to the child's school from his/her house. Since the dependent variable is private school choice, a differenced form of distance is specified, i.e., the distance to a public school subtracted from the distance to a private school. However, we use the travelling time to school<sup>27</sup> as a proxy for distance in this case, and compute the relative distance by comparing the reported time taken for each child to travel to his/her school and the average time taken in the cluster to travel to the alternative school type. Moreover, to capture the differential penalty of distance on school choice with respect to the

<sup>26</sup> These variables are similar to those used in the MICS 2007/08 for Punjab in the construction of a wealth index.

<sup>27</sup> Of the sample of school-going children under study, 82 percent were reported to walk to school.

child's gender, the specification is augmented by the addition of a distance-gender interaction term.

For the purpose of capturing regional variations in school choice in rural Punjab, we add the household's location to  $X$ , depending on whether the child belongs to a household in northern, southern, or central Punjab (these classifications are based on the criterion of Cheema et al., 2008). Two dummies are specified for northern and southern Punjab, with central Punjab as the base category.

An additional dimension that is studied is parents' perceptions of the employment opportunities available to their child. The nature and type of employment opportunities that parents perceive for their child are expected to play an instrumental role in the former's choice of school. The types of employment parents perceive are aggregated to define two broad categories: (i) jobs that require specialized education and (ii) jobs that do not require specialized education and thus might not justify investing in high-cost private education. The first category includes jobs in teaching, medicine, engineering, or the government sector.<sup>28</sup> The second category of employment perceived by parents entails jobs in manual labor, factory work, or farm labor, for which they may think less education is needed.

To capture the effect of parents' perceptions of the prevalent employment opportunities on school choice, we estimate specification (2), which includes a binary variable given by  $Emp_c$ , equal to 1 if 'low-skill' jobs are available and 0 if parents perceive 'high-skill' jobs to be available for their children in area  $c$ . The perceived availability of employment opportunities is likely to have a differential impact on school choice across wealth quintiles. To formally test this, we augment the specification by adding an employment\*wealth interaction:

$$Prob(S_{ik} = 1 | PS, Emp, X) = \gamma + \sum_{n=1}^4 \beta_n (PS_{ikn}^p - PS_{ikn}^g) + \beta_5 Emp_c + \beta X + \varepsilon_{ik} \quad (2)$$

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<sup>28</sup> In rural areas, public sector jobs are considered very prestigious, and so the availability of government employment may give parents incentive to incur the high expenditure necessitated by their child's schooling.



5. Results and Discussion

5.1. Enrolled versus Non-Enrolled Children<sup>29</sup>

*Household socioeconomic status appears to be an important determinant of schooling.* Table 5 shows that enrolment rates for children in the 5–18-year age bracket is 29 percentage points higher in the richest wealth quintile compared to the poorest quintile. Almost half the children in the poorest households do not attend school. In addition, the percentage of children who have never attended school is more than six times as high in the lowest quintile (37.5 percent) compared to the highest quintile (6.3 percent).

Our regression analysis of the determinants of enrolment corroborates this finding—as wealth increases, parents are 5 percent more likely to send their child to school. Even if the tuition fee is zero, parents incur considerable expenditure on uniforms, books, and stationery, etc. Also, if the child goes to school, it means that he/she is unavailable for household chores, which is especially relevant for females. All these factors make the socioeconomic status of a household a barrier to a child’s schooling.

**Table 5: Patterns of enrolment and out-of-school children (5–18) by socioeconomic status (%)**

Quintile	In school*	Out of school*		Type of school**			
	Enrolled	Never attended	Dropped out	Private	Public	Madrassa	Other
Lowest	50.8	37.5	11.7	9.2	86.5	0.0	4.3
Second	68.5	14.4	17.1	14.9	80.6	0.5	4.0
Third	65.8	18.7	15.5	32.2	66.8	0.0	1.0
Fourth	69.2	9.9	20.9	28.6	65.2	0.0	6.2
Highest	79.4	6.3	14.3	44.1	53.4	1.0	1.6

Note: \* = percentage of children, \*\* = percentage of enrolled children.  
Source: PERI School Choice Survey (2011).

<sup>29</sup> A preliminary regression on the correlates of school enrolment was performed with household size, the total number of children (aged 5–18), location, child labor, child gender, household wealth, and parents’ education as explanatory variables. For the regression results of this section, refer to Table B1, Appendix B.

*Males are more likely to attend school than females.* The regression results indicate that, when we control for other household factors, males are 10 percent more likely to be sent to school than females. A possible reason, as posited by Dreze and Kingdon (2001) is that parents are less concerned about females' education given that their daughters leave home when married.

*The pro-male gender bias is higher at lower wealth levels.* Table 6 reports gender-disaggregated numbers for each wealth quintile. Poverty seems to be an important factor in explaining gender differentials in schooling: the male-female gender gap widens from a negative 5 percent<sup>30</sup> in the richest 20 percent of the population to 11 percent in the bottom 20 percent of the population. When resources are limited, there may be a tendency to invest more in sons in the intra-household allocation of education expenditure.

**Table 6: Patterns of enrolment and out-of-school children (5–18) by gender and socioeconomic status (%)**

Quintile	In school*	Out of school*		Type of school**			
	Enrolled	Never attended	Dropped out	Private	Public	Madrassa	Other
<b><i>Lowest = 1</i></b>							
Males	56.0	34.3	9.6	8.6	88.2	0.0	3.2
Females	44.8	41.2	14.0	9.4	84.4	0.0	5.2
<b><i>Second</i></b>							
Males	74.1	13.2	12.6	15.8	78.7	0.0	4.7
Females	61.1	22.1	16.8	21.1	77.6	0.0	1.3
<b><i>Third</i></b>							
Males	70.4	16.4	13.2	22.3	75.0	0.0	2.7
Females	61.2	21.0	17.8	26.9	68.8	0.0	4.3
<b><i>Fourth</i></b>							
Males	77.3	7.1	15.6	23.9	73.4	0.0	2.7
Females	61.6	12.6	25.8	40.9	54.8	0.0	4.3
<b><i>Highest = 5</i></b>							
Males	77.2	4.7	18.1	40.4	57.0	0.9	1.8
Females	81.8	8.0	10.2	47.7	48.6	0.9	2.7

Note: \* = percentage of children, \*\* = percentage of enrolled children.

Source: PERI School Choice Survey (2011).

<sup>30</sup> Negative implies that, at the uppermost tail of the wealth distribution, female enrolment is greater than male enrolment. However, for all other wealth quintiles, male enrolment is higher.

*Intergenerational effects exist in education.* The level of parental education increases the likelihood of their child’s education. Its impact on the enrollment decision is twice as high for maternal literacy (4 percent) relative to paternal literacy (2 percent). Because educated parents are more likely to be aware of the benefits of schooling, parental education emerges as a stronger predictor of school attendance. A possible reason for the higher effect of maternal education on enrolment is that it is strongly related to females’ school participation (Dreze & Kingdon, 2001).

*There is considerable regional variation in enrolment in Punjab: Enrolment is higher in northern Punjab and lower in southern Punjab relative to the central region.* Educational indicators are the most encouraging in the northern part of the province as demonstrated by Table 7; the enrolment rate in Talagang (Chakwal) is the highest (86.5 percent), while the ratio of out-of-school children is lowest. This implies that approximately one in every 10 children is not in school in Talagang.

**Table 7: Regional patterns of enrolment and out-of-school children (5–18) (%)**

		In school*	Out of school*		Type of school**			
District	Tehsil	Enrolled	Never attended	Dropped out	Private	Public	Madrassa	Other
Northern Punjab								
Chakwal	Talagang	86.5	4.7	8.9	30.7	68.1	0.0	1.2
Central Punjab								
Jhang	Jhang	67.4	16.8	15.8	26.5	67.5	0.4	5.6
Nankana Sahib	Sangla Hill	69.4	15.3	15.3	26.0	74.0	0.0	0.0
Faisalabad	Jinnah Town	76.6	15.3	8.1	39.8	54.6	1.1	4.6
Hafizabad	Hafizabad	73.0	8.4	18.6	34.7	61.2	0.6	3.5
Southern Punjab								
Khanewal	Mian Channu	61.7	17.3	21.0	15.8	84.2	0.0	0.0
Bahawalpur	B. Sadar	46.9	35.4	17.7	17.0	74.0	0.0	9.0
Bahawalpur	Khairpur Tamewali	36.2	53.6	10.1	14.3	82.1	0.0	3.6

Note: \* = percentage of children, \*\* = percentage of enrolled children.  
Source: PERI School Choice Survey (2011).

The average enrolment rate in the surveyed tehsils in central Punjab is 71.6 percent, while the situation in the southern part is very different. Compared to the northern and central parts, the region lags behind in socioeconomic indicators. The average enrolment rate for the three surveyed tehsils in southern Punjab is only 48.3 percent, implying that every second child is out of school. Thus, along a spectrum ranging from lowest to highest, northern Punjab ranks highest, southern Punjab lowest, and central Punjab falls midway between the two in terms of performance in the education sector.

Our multivariate regression framework also reveals that parents in the northern region are 18 percent more likely to send their child to school relative to central Punjab; in southern Punjab, parents are 12 percent less likely to enroll their child in school relative to central Punjab. This may be linked to the socioeconomic conditions of these regions, since the northern part is primarily a nonagricultural area where people rely on wage employment as an income source as opposed to the rural areas in the central and southern parts where farm wages are the main source of income. This is in line with the evidence from Cheema et al. (2008), who find that northern Punjab performs better in socioeconomic indicators relative to the other regions.

*Paid child labor is a deterrent to a child's schooling.* An additional hour of child labor carried out for remuneration reduces the probability of that child attending school by 5 percent. When a child engages in paid labor, the opportunity cost of school participation is the foregone wage income. There is, therefore, less incentive for parents to send their child to school since not only will it mean losing the income from the child's work but also incurring the costs of his/her schooling.

## 5.2. Private versus Public Schooling

### 5.2.1. *Wealth*

*Private schools are accessible to poor parents.* Enrolment rates by wealth quintile show that 9 percent of all school-going children in the bottom 20 percent of the population are enrolled in private schools (Table 5). This, in part reflects the rise of low-fee private schools.

*Wealthier parents are more likely to send their children to private schools than poor parents.* The share of private school-going children increases with socioeconomic status—the share in the top 20 percent being four times as great as that in the bottom quintile (Table 5). Our regression results substantiate this finding. With each successive quintile, the probability of enrolling in a private relative to a public school increases by 6 percent (Table B2, Appendix B).

*Parents across all socioeconomic groups favor females in the private versus public schooling decision.* While parents discriminate against females in the enrolment decision, they are more likely to choose private schooling for their daughters rather than for their sons. This is evident from the fact that a greater percentage of females are enrolled in private schools than males across all wealth quintiles (Table 6).<sup>31</sup> This observation holds true for all levels of schooling. The differential between male and female private enrolment rates is especially large at the middle and high school levels. In each case, female private enrolment is almost twice as high as male enrolment in private schools (Table A4, Appendix A).

This differential persists in our regression results even when we control for other factors. It could point to the limited public schooling options available for girls since the Punjab Program Monitoring and Implementation Unit's 2009 census of public schools in Punjab shows that there are more public schools for boys than for girls in the tehsils that were surveyed under the PERI survey. Thus, private schools may be filling an important void in the market for education. To fully establish this argument, a more detailed profile of government schools by gender and schooling level in the surveyed areas is needed.

*Girls from richer households are more likely to go to private schools than girls from poorer households.* Gender-disaggregated regressions show that the impact of wealth on school choice varies by gender—females in the second quintile have a 7 percent higher chance of being enrolled in a private school relative to their counterparts in the bottom 20 percent of the wealth distribution. Wealthier households tend to have a greater pool of resources, thus making it easier for parents to bear the expenses associated with private education.

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<sup>31</sup> A comparison of these findings with those from other datasets such as the PSLM Survey suggests that the patterns that emerge in the surveyed tehsils accord with provincial and national trends.

*The wealth effect on the choice of private schooling is stronger for high school children compared to primary school children across all socioeconomic groups.* The results show that the wealth effect is three times greater for high school children (20 percent) than for primary school children (6 percent). This is not surprising given that private high school education is more expensive than primary or middle school education. For the sample under consideration, the average monthly tuition fee reported for private high school children is more than double (PKR 518) that of private primary school children (PKR 242). Therefore, as wealth, i.e., the pool of available resources, increases, the impact on private education witnessed at the higher tier of schooling is far greater relative to the primary level.

### *5.2.2. Employment Opportunities<sup>32</sup>*

*Parents are more likely to choose private schools if they think employment opportunities that require a high level of education are available for their children.* Such jobs might entail working overseas, government employment, school teaching, or a profession such as medicine, engineering, or banking. All these jobs require a minimum level of education and have strict eligibility criteria. The availability of lucrative employment opportunities would motivate parents to undertake greater investment in their children (the choice of private over public schooling in some ways reflects that willingness) since the availability of such jobs would promise higher future returns on their children's education.

*Parents are less likely to choose private schools for their children if the prevailing job opportunities do not require specialized education.* The prevalence of jobs that parents perceive as requiring a comparatively low level of education—such as running a family business, working on a farm, in a factory, or as a laborer—is associated with a 12 percent less likelihood of their choosing a private school for their child. Investment in a child's education seems to be linked to weighing the costs of education with the expected returns on that education. If the expected future returns are low (as would be the case in most of the jobs in this category), parents will be less willing to bear the costs of private

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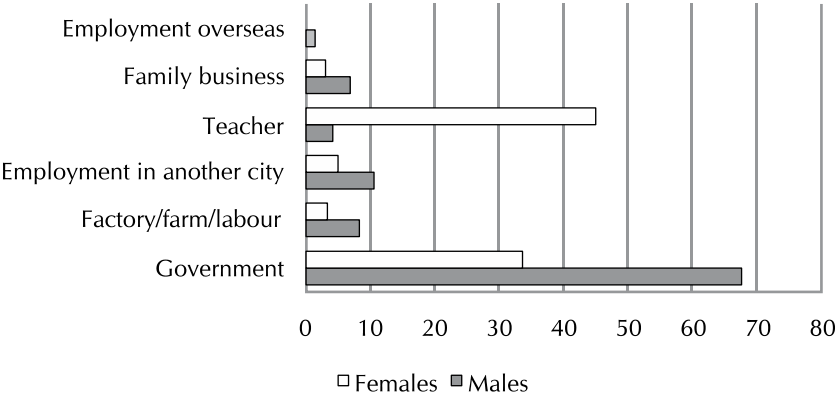
<sup>32</sup> For this section, job opportunities reflect parents' perceptions and not the actual availability of jobs.

schooling. Additionally, if parents do not think that the quality of education their child will acquire in school is likely to improve the likelihood of his/her availing the prevalent job opportunities, they may not consider it worthwhile to invest in private education.

*Richer parents are more likely to send their children to private schools even when the prevailing job opportunities do not require specialized education.* At lower levels of the wealth distribution, households that perceive low-education jobs to be prevalent are less likely to choose private schools for their children. The effect is reversed for households at the upper tail of the wealth distribution. Despite the perceived availability of low-education jobs, these households continue to have a greater likelihood of choosing private schools for their children. Thus, the impact of perceived availability of employment opportunities on school choice varies by household socioeconomic status (see Table B3, Appendix B).

*Parents perceive different jobs for their sons and daughters.* Figure 1 constructed from our data gives an insight into the employment opportunities that parents perceive for their children. It reveals that the nature of employment varies by the sex of the child: 53 percent of female children are perceived as likely to gain employment as teachers as opposed to only 5 percent of the male sample. The percentage of male children perceived as likely to work in the government sector is about twice as high as that of females.

**Figure 1: Parents’ perception of employment opportunities by gender (percentage of children)**

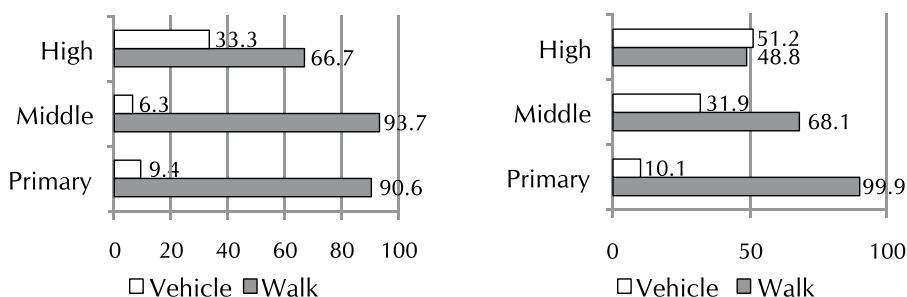


### 5.2.3. Access to Schools

Parents show greater preference for private education as the accessibility of private relative to public schools increases in a cluster. The less time it takes to travel to a private school relative to a public school within a cluster, the higher the probability of enrolling in a private school (7 percent) (Table B2, Appendix B). Of the sample of school-going children under study, 82 percent reported walking to school. In a rural context where going to school on foot is the predominant means of travel, distance emerges as a significant determinant of school choice.

Parents are sensitive to the proximity of private relative to public schools when choosing a school for their daughters. The gender-disaggregated results show that, as the relative distance between private and public schools increases in a cluster, parents are 7.5 percent less likely to choose a private school for their daughters (Table B2, Appendix B). Regressions by level of schooling indicate that this effect holds at the primary and middle tiers but not for high school girls. The impact is, however, stronger for younger females (13 percent for primary school-going girls and 8 percent for middle school-going girls) (Table B2, Appendix B). Figure 2 shows the modes of transport used by children for going to school. Given that more than 90 percent of primary and secondary school-going females walk to school, it is not surprising that parents consider distance an important determinant of school choice for their daughters.

**Figure 2: Modes of transport by gender (percentage of children)**





*Parents' choice of private school for their sons is not tied to the proximity of that school relative to a public school in the area. Thus, while distance matters for females, it is insignificant in the case of males. This is evident both from the overall male regression and gender-disaggregated regressions at the primary and middle tiers of schooling. Almost 57 percent of males at the primary level are reportedly accompanied by their parents, a sibling, friend, or relative on their way to school. Thus, even though more than 90 percent of the male children sampled walk to school, as long as they are accompanied by another person, their parents might not consider distance an important constraint when choosing a school for their sons.*

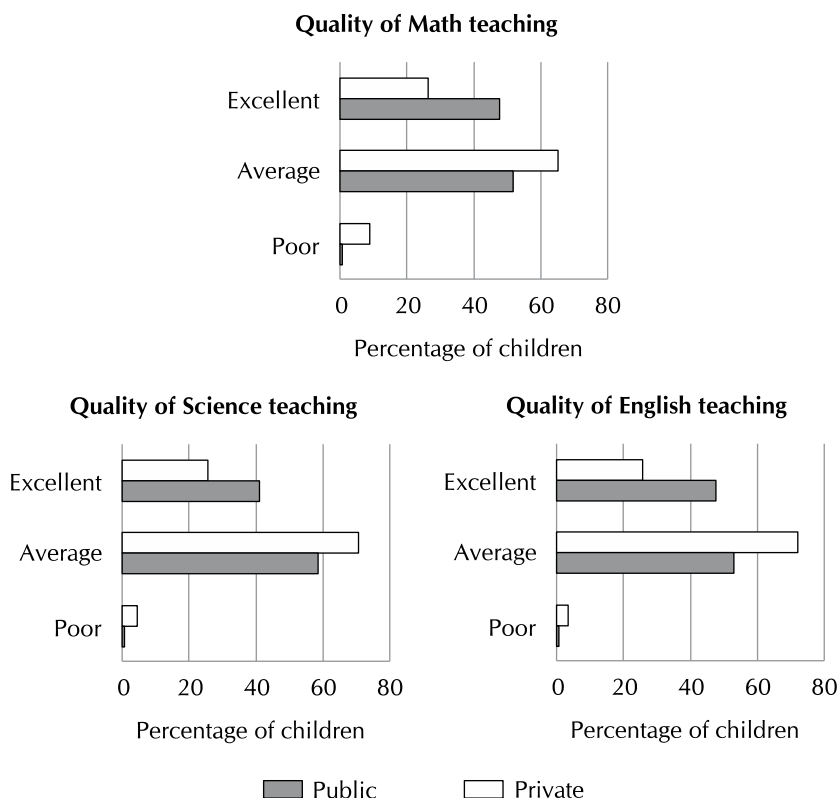
*Distance does not influence school choice for either males or females at the high school level. A much larger percentage of children at this level use some sort of vehicle. Half of all males and one third of all females have access to a motorcycle, school van, rickshaw, or public transport. It could be either that high schools are located far away from the main settlement or that parents perceive these modes of transport as safer than walking to school, and do not consider distance a significant determinant of school choice for children at this level. Needless to say, older children are less vulnerable than younger children and parents may be more comfortable sending their older children to schools farther away.*

#### 5.2.4. *Perceived Quality of Schools*<sup>33</sup>

*The quality of English, science, and mathematics teaching is generally higher at private schools than at public schools. Parents' ratings of the quality of teaching of these three subjects at their child's school are shown in Figure 3.*

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<sup>33</sup> It is important to stress that the findings of this section are based on parents' perceptions of school quality rather than on actual measures of quality.

**Figure 3: Parents' ratings of English, science, and mathematics teaching**

The teaching quality gap between private and public schools is evident—a larger percentage of public school-going children's parents rate the teaching as 'average' (or 'poor') compared to those of private school-going children. Conversely, the percentage of children whose parents rate the teaching as 'excellent' is higher for private schools. For the 'excellent' measure, this private-public gap is around 22 percent for both English and mathematics teaching and 15 percent for science teaching.

*The quality of subjects taught is instrumental in explaining school choice at the middle and high level, but not at the primary level.* Our results indicate that the subject teaching quality index is insignificant at the primary level but significant in explaining school choice at higher tiers. In particular, the impact of better teaching at private schools relative to public schools on private school enrolment is almost twice as strong for high school children (8 percent) relative to middle school

children (4 percent) (Table B2, Appendix B). A possible reason could be that parents, given the greater expenditure they incur at higher levels of schooling, are more concerned about the quality of knowledge their children acquire at school.

*The quality of subject teaching matters for males, but not for females.* For the male sample, parents with better perceptions of the quality of teaching at private schools (relative to public schools) are 5 percent more likely to send their sons to private schools (Table B2, Appendix B). For females, however, this effect is insignificant. This could be because parents perceive that the benefits of educating their children are likely to differ by gender. For example, higher academic quality may be deemed important for sons to enhance their income-earning potential, while for daughters other considerations such as improved marriage prospects may be considered more important.

A study by Halai (2011) on gender awareness in a rural district in Pakistan indicates that both male and female teachers viewed mathematics as a more useful subject for boys than for girls since they felt that mathematical skills would likely be more important for future careers that boys might pursue. For girls, the predominant view was that they would be homemakers and apart from helping in household expenditure calculations, mathematics would be of little value in their future lives.

Parents attach varying importance to English, mathematics, and science teaching at different tiers of schooling. Splitting the subject quality index into its components for the three levels of schooling adds further insight to the results. For primary-level children, we find that English, mathematics, and science teaching quality are all individually insignificant in determining school choice. This could be because their parents are not driven by the quality of teaching when choosing the type of school, and instead regard other dimensions of school quality—such as teachers' presence—as more relevant if they feel that, at the primary level, the need for a more disciplined environment is an important factor.

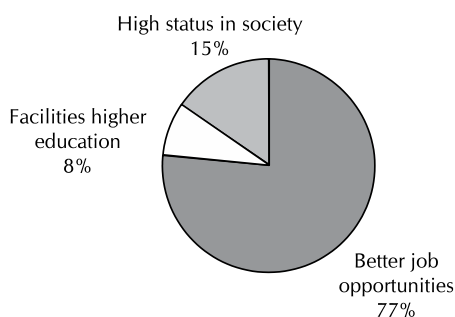
At the middle tier of schooling, parents appear to ascribe different values to the three main subjects, with only English and mathematics significantly determining school choice. Better perceptions of English and mathematics teaching at a private school relative to a public school increases the likelihood of enrolment in a private school by 6 percent for both subjects (Tables B4, B5, and B6, Appendix B).

*The teaching quality of all three subjects is crucial for high school children.* With English and mathematics teaching quality continuing to be significant determinants of school choice at the high school level, the quality of science teaching becomes significant as well. Better parental perceptions of English, mathematics, and science teaching quality at private schools relative to public schools is associated with a probability of 17 percent, 10 percent, and 15 percent, respectively, of choosing a private school (Tables B4, B5, and B6, Appendix B).

This demand for better teaching may arise particularly in the 10th and final year of high school when students are expected to sit the matriculation (or “matric”) exam administered by the provincial education department, to gain a certificate of high school completion. Without this certificate, students cannot make the transition into college education and also have fewer employment opportunities. Passing all the subjects is required for an overall pass in the matric exam. This is, arguably, why parents’ perceptions of the teaching quality of all subjects emerge as significant predictors of school choice at the high school level in our regression framework.

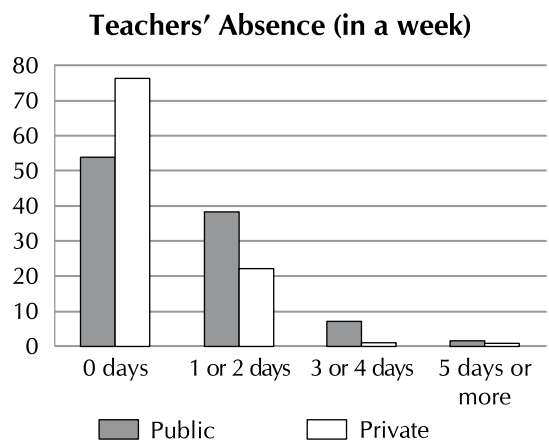
*The emergence of English as a determinant of school choice is a consequence of the high value that parents attach to English language skills in relation to their children’s future employment.* Parents of school-going children were asked why English was an important factor when choosing a private over a public school. Their responses reveal that 77 percent thought that better English skills opened up better job opportunities for their children, while 15 percent considered it a means of attaining higher social status (Figure 4).

**Figure 4: Reasons for the importance ascribed to English**

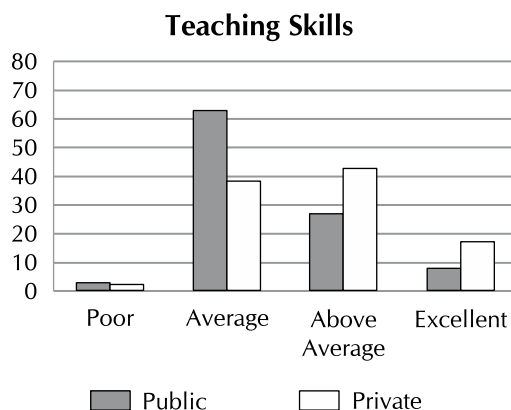


*Teacher absenteeism is lower in private schools.* Figure 5 clearly shows that teachers’ absence as perceived by parents is higher in public schools. For 9 percent of public school children, parents think that teachers are absent more than two days a week; this number is only 2 percent for private school children. The private-public gap in absenteeism rates is 23 percent for zero days’ absence. Andrabi et al. (2007) argue that such high teacher absenteeism in public schools can be explained either by the lack of accountability in the government sector and/or by the additional nonteaching responsibilities given to public school teachers.

**Figure 5: Teacher absenteeism in private and public schools**



*Parents perceive that teaching skills are better at private schools.* Parents’ ratings for teachers demonstrate that they think that private school teachers are better, pointing to the existence of a private-public gap in teaching skills (Figure 6). For 17 percent (43 percent) of private school children, parents rate teachers’ skills as ‘excellent’ (‘above average’), but this proportion is only 8 percent (27 percent) for public school children. Conversely, for a greater proportion of public school children, teachers’ skills fall at the lower end of the rating scale. The evidence on primary school children in Andrabi et al. (2007) confirms this finding: while only 45 percent of the parents sampled rated the teaching skills of government school teachers as above average or excellent, this number was 60 percent for private school teachers.

**Figure 6: Teaching skills in private and public schools**

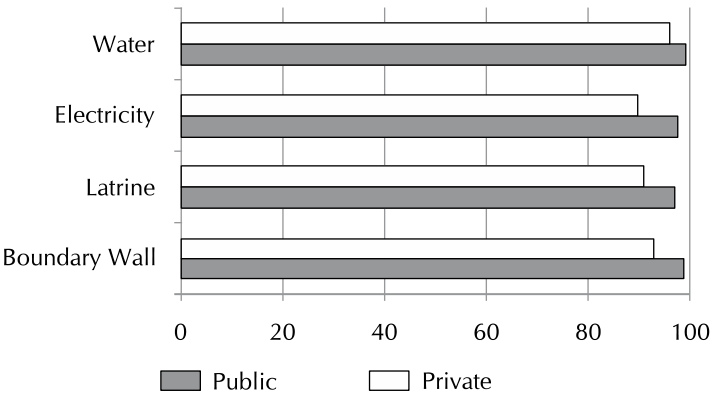
*Teacher quality (measured by a composite index of perceived teaching skills and teacher presence) matters for females but not for males.* The quality of a teacher (measured by an aggregated index of the teacher's presence, qualifications, and skills) surfaces as an essential factor in explaining school choice for females, but is insignificant for males. The likelihood of parents choosing a private school for females improves by 4 percent since the perceived difference in teacher quality in private schools relative to public schools increases. (Table B2, Appendix B). Comparing this result to our previous findings on subject teaching quality shows that, while the latter matters for males, teacher quality is important for females. This could be because parents regard the presence of teachers more important for females as a safety concern, whereas for males, better academic quality plays a vital role in improving their job opportunities.

*While both teachers' presence and their skills and competence are instrumental at the high school level, teachers' presence is important only at the primary level.* The presence of teachers is an important determinant of school choice at the primary level; teaching skills, on the other hand, are insignificant. Our regression analysis shows that, as teacher absenteeism in private relative to public schools decreases, parents are 9 percent more likely to choose private schools for their children at the primary schooling tier (Tables B7 and B8, Appendix B).

However, we find that parents are concerned about the quality of teaching skills as well as teacher absenteeism when choosing a high school for their children. If parents think that teachers at private high schools are better, they are 18 percent more likely to choose a private school. Similarly, the regular attendance of teachers at a private high school is likely to increase enrolment by 30 percent. This shows that parents value different aspects of a teacher across the child’s level of schooling. As discussed earlier, high school students are expected to sit their matriculation exam, and so better and regular teachers at a school will count as a key factor in school choice. Therefore, both teachers’ presence and the quality of their teaching skills stand out at the high school level.

*The private-public gap in measures of school infrastructure is low.* The data reveals that, for more than 90 percent of private and public school children, parents feel that schools are able to provide a basic infrastructure (measured by the presence of a boundary wall, a latrine, water supply, and electricity supply) (Figure 7). However, parents do perceive a slightly better infrastructure quality at private schools in all measured aspects, although this gap is not very large and ranges from 3 to 8 percent.

**Figure 7: Parents’ perceptions of provision of school infrastructure (percentage of children)**



*School infrastructure is an important determinant of school choice for high school children.* Parents who perceive the quality of infrastructure at private schools to be better than public schools are 14 percent more likely to choose a private school for their child (Table B2, Appendix B). In each

individual cluster, the demand for high schooling is low compared to primary and middle schooling, and the need for well-equipped science labs makes it financially more feasible to have larger high schools serving several settlements or clusters. As a result, high schools in rural areas are likely to be, on average, farther away from a particular settlement than the primary or middle schools serving that area.

For parents choosing between private and public high schools, a school's infrastructure signals the its overall quality since the infrastructure is easily visible and comparable with that of other schools. Due to the school's distance from the main settlement, parents do not have the chance to interact with their children's teachers frequently or to keep track of their attendance. This may be why the school infrastructure index emerges as a significant determinant of school choice at the high school level and not at other levels of schooling.

#### 5.2.5. *Other Observations*

*The safety and security of female children plays a decisive role in parents' choice of primary schools.* The impact of parents' perceptions of the existence of a boundary wall on school choice at the primary level depends on the sex of the child. In particular, females are 27 percent more likely to be enrolled in a private school with a boundary wall relative to males at the primary tier of schooling (Table B9, Appendix B). This shows that the safety and security of girls is a key factor when parents choose a school for their young daughters. These results are supported by the literature, which shows that the existence of a boundary wall is instrumental in parents' decision to send their children (especially girls) to school (Anderson, 1988; World Bank, 1996; Annual Status of Education Report, 2010).

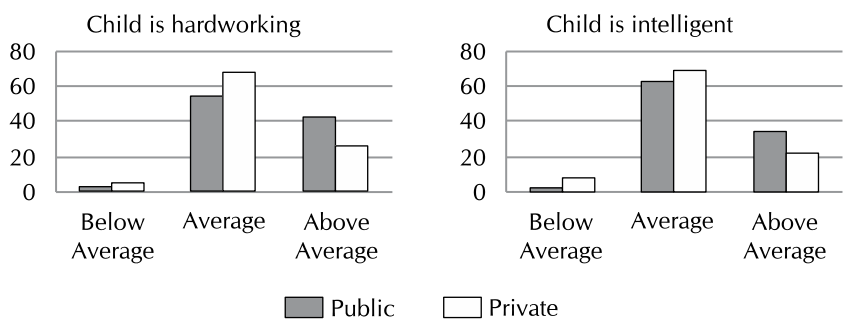
*Parents discriminate among their children on the basis of each child's skills.* A look at parents' responses regarding their child's abilities (Figure 8) reveals a tendency to send children who are more intelligent and hardworking to private rather than public schools. The percentage of children reported to be 'above average' hardworking (intelligent) is 16 percent (13 percent) higher for private school children than for public school children. Our multivariate regression analysis substantiates the finding that children in the same household receive different treatment in terms of schooling. Since private education is relatively more



expensive than public education, parents are 3 percent more likely to choose a private school if they perceive their child to be generally intelligent and hardworking (Table B2, Appendix B).

This shows that the intra-household allocation of educational expenditure is biased toward those children whom parents perceive as hardworking and intelligent. Additionally, by levels of schooling, perceptions of child competence are significant only for high school children. By and large, private high school education is much more costly than primary or secondary education. Thus, parents would be willing to invest more in their child only if they feel that the child’s capabilities justify the extra investment required in the case of a private high school relative to a public high school.

**Figure 8: Parents’ ratings of their child’s competence (%)**



*Private enrolment is highest in central Punjab relative to northern and southern Punjab.* The regional patterns in Table 7 indicate that, while the private sector has substantial outreach in the surveyed tehsils in northern and central Punjab, it has far more limited scope in the southern tehsils of the province. In the northern tehsils, for instance, private enrolment for children between 5 and 18 years of age stands at 30.7 percent, while in the surveyed tehsils in central Punjab, the average private school enrollment rate is 31.8 percent. Thus, in each of these regions, the private sector caters, on average, to one third of all enrolled children in the 5–18-year age bracket.

In the southern tehsils, however, the private sector’s scope is much more limited, with the average private school enrolment rate standing at only 15.7 percent. To investigate this finding further, we employed the

Punjab Examination Commission 2010 database, which provides test scores for all public schools in Punjab for Grades 5 and 8. Tabulating the average test scores by tehsil for mathematics, science, and English shows that the average test score for each of these subjects is higher in the northern tehsils than in the central tehsils. This could result in lower demand for private schooling relative to central Punjab. However, the lower rate of private enrolment in southern Punjab relative to northern and central Punjab may be linked to the extent of rurality.

### 5.2.6. *Schooling Costs*

*The expenditure incurred on private education is higher relative to public education.* Schooling costs were calculated from expenditure data by adding up the reported primary expenditure on schooling—consisting mainly of admission/registration/examination fees (monthly), school tuition fees (monthly), and miscellaneous school costs comprising the monthly cost of uniforms/shoes/books, private tuition center fees, and the cost of transport. We looked at total schooling expenditure across wealth quintiles. The data suggests that there is a significant wedge between per capita expenditure on private and public schools. Parents of a private school-going child spend far more on their child's schooling than the parents of a public school-going child (columns 1 & 2 in Table 8); gender-disaggregated results also support this finding. This shows that some parents in rural Punjab prefer to send their children to private schools despite the relatively high expenditure it incurs relative to public education

**Table 8: Total expenditure per capita for public and private schools by quintile and gender (PKR per month)**

Quintile	(1)	(2)	(3)	(4)	(5)	(6)
	Private schools	Public schools	Private schools		Public schools	
			Boys	Girls	Boys	Girls
1	245	75.6	330	124	71	86
2	289	82.5	284	296	86	79
3	520	105.0	761	381	99	116
4	399	234.0	434	370	238	230
5	592	206.0	756	432	205	208

Source: PERI School Choice Survey (2011).

*School choice for females is elastic to the expenditure incurred on private education relative to public education.* The study's regression results show that the cost of educating a child has a significant impact on the choice of school for females. In particular, a unit increase in expenditure on private schooling relative to public schooling decreases the probability of female enrolment in private schools by 13 percent (Table B10, Appendix B). For males, however, this factor is insignificant in explaining school choice. This reveals that the costs of schooling are a key factor when deciding on the type of school for girls, but not for boys.

*The impact of relative expenditure on school choice differs by the level of schooling—it is smallest at the primary tier and largest at the highest tier.* The effect of expenditure on school choice is twice as large at the highest level (18 percent) relative to the primary level (9 percent). A possible reason for this differential impact is that the private-public gap in expenditure increases by the level of schooling, thus having a stronger impact at higher levels (Box 3).

**Box 3: Measuring Relative Expenditure**

The measure of expenditure incurred on by schooling takes a differenced form to account for the 'relativity' aspect, i.e., the cost of public schooling subtracted from the cost of private schooling. The relative expenditure on each child is then measured by comparing the cost of his/her private schooling and the average cost of schooling in the alternative public school in the cluster.

**6. Summary of Findings and Conclusions**

The objective of this study was to explore why Pakistani parents in rural Punjab choose to send their children to low-fee private schools when free public schools are available. The data collected to support the study encompassed parents' perceptions of school quality, teacher quality, and employment opportunities available in the area, along with a range of child-, parent-, and household-specific characteristics that might affect parents' choice of school.

The study sample was chosen to best represent rural Punjab in areas where both public and private schools were available. A survey of 1,024 households was conducted in 64 clusters, spanning eight tehsils in seven districts, and taking into account variations across the province.

In the surveyed sample, 33 percent of children in the 5–18-year age bracket were found to be currently out of school. The majority of enrolled children attended government schools, 27 percent attended private schools, 0.3 percent studied in madrassas, and 3.4 percent were enrolled in NGO, foundation-assisted, or other types of schools.

The study has found that female private enrolment is higher than male private enrolment by 7 percent, although overall enrolment rates for girls were only 62 percent compared to 71 percent for boys. However, parents spent more on boys' private schooling than on that of girls'.

Private enrolments vary by region, accounting for about 30 percent of enrolments in the northern and central surveyed tehsils, and 16 percent of enrollments in the southern tehsils.

The share of private sector school enrolments appears to rise with the level of schooling, especially for girls. Private enrolments account for a fourth of all enrolments at the primary and middle school level, and this proportion increases to a third of all enrolled children at the high school level.

Distance is an important factor when choosing private schools at the primary level, but not at the high school level, indicating that safety concerns and means of transport are presumably a smaller constraint to older children.

Wealthier families are more likely to send their children to private schools. Females are more likely to attend private schools across all socioeconomic groups. The wealth effect is strongest at the high school level and weakest at the primary level.

Schooling costs emerge as a significant determinant of school choice for females but not for males. School choice is most elastic to expenditure incurred on private relative to public schools at the high school level; it is least elastic to expenditure incurred at the primary level.

For poorer parents, perceived employment opportunities are an important determinant of investing in private school. Parents will opt for private education if they think that the jobs available require certain minimum educational qualifications (such as government jobs, overseas jobs, and teaching. If parents perceive that the only job opportunities

available are those that require less specialized education, such as running a family business, farming, or factory work, then there is a 12 percent less likelihood that they will choose private education. When family resources are less constrained, however, parents do not make this distinction—richer parents are more likely to choose private education even when perceived employment opportunities do not require a minimum level of education.

Parents value different dimensions of school quality at the primary, middle, and high school level. At the primary level, a teacher's presence is the only significant determinant of school choice, while for high school children all dimensions of perceived school quality—teacher presence, teaching skills/competencies, the quality of subjects taught, the quality of physical infrastructure—are significant in explaining parents' school choice decision.

These findings have important implications for education policy. In the past, there has been huge emphasis on investing in physical infrastructure facilities within the education sector. While infrastructure matters at the high school level, our findings suggest that it may not be very important in explaining why children are out of school. This calls for revisiting the debate on whether lagging education indicators in Pakistan are a consequence of supply- or demand-side characteristics.

Our findings also show that a significant number of children from the bottom quintiles of the population are also benefitting from private schools. Given that private schools are catering to the rural poor, they can serve as an important tool for reducing inequality in the future. Thus, if the government wants to improve schooling quality and improve participation rates, it should make use of existing private schools. This will require a shift in the government's focus from "providing" education to "facilitating" education.

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## Appendix A: Supplementary Data

**Table A1: Inter-provincial (rural) patterns of enrolment and out-of-school children (5–18) (%)**

Area/ gender	Enrolled	Out of school	School type			
			Private	Public	Madrassa	Other
<i>Pakistan</i>	54.4	45.6	14.9	82.5	1.5	1.1
Males	64.1	35.9	14.3	83.1	1.7	1.0
Females	42.8	57.2	16.1	81.3	1.3	1.2
<i>Punjab</i>	61.9	38.1	23.4	73.9	1.5	1.3
Males	68.0	32.0	22.2	75.0	1.8	1.0
Females	55.4	44.6	24.9	72.4	1.1	1.6
<i>Sindh</i>	47.4	52.6	5.51	92.6	0.9	1.0
Males	57.3	42.7	6.3	91.6	0.9	1.1
Females	34.3	65.8	3.7	95.0	0.7	0.7
<i>KP</i>	60.3	39.7	16.9	80.9	1.4	0.7
Males	74.1	25.9	17.6	80.2	1.5	0.7
Females	44.1	55.9	15.6	82.3	1.3	0.8
<i>Balochistan</i>	43.6	56.4	3.7	92.6	2.6	1.2
Males	55.9	44.1	4.4	92.1	2.4	1.1
Females	27.6	72.4	1.9	93.9	2.9	1.3

Source: Pakistan Bureau of Statistics, PSLM Survey 2008/09.

**Table A2: Gender-disaggregated gross enrolment rates, 2009 (%)**

Country	Primary		Secondary		Tertiary	
	Males	Females	Males	Females	Males	Females
Pakistan	92.5	77.2	36.8	29.1	6.9	5.9
India	114.8	111.1	63.7	56.0	15.7	11.0
Bangladesh	93.2	97.2	39.9	44.8	10.0	5.6
Sri Lanka	96.7	97.1	Na	Na	Na	Na
Maldives	113.7	108.2	81.5	85.9	Na	Na
Bhutan	108.4	109.9	62.0	61.4	8.2	4.8

Source: World Bank, World Development Indicators (2010).

**Table A3: Patterns of enrolment and out-of-school children (5–18) in rural Punjab by region (%)**

Region	Enrolled	Out of school	School type			
			Private	Public	Madrassa	Other
<i>Northern</i>	80.7	19.3	25.1	73.3	1.3	0.3
Males	82.7	17.3	25.4	72.7	1.6	0.4
Females	78.6	21.4	24.8	74.0	1.0	0.3
<i>Central</i>	67.9	32.1	27.8	69.6	1.2	1.4
Males	72.6	27.4	26.3	71.2	1.4	1.1
Females	62.9	37.1	29.7	67.7	0.9	1.7
<i>Southern</i>	50.7	49.3	20.4	75.4	2.8	1.5
Males	58.4	41.6	20.5	75.3	3.2	1.0
Females	42.5	57.5	20.3	75.4	2.1	2.2
<i>Western</i>	51.9	48.1	10.4	87.0	1.3	1.3
Males	61.7	38.3	10.4	86.9	1.5	1.2
Females	40.3	59.7	10.4	87.1	0.9	1.6

Source: Pakistan Bureau of Statistics, Multiple Indicator Cluster Survey, 2008/09.

**Table A4: Patterns of Enrolment and out-of-school children (5–18) in rural Pakistan (%)**

Quintile/gender	Enrolled	Never attended	School type			
			Private	Public	Madrassa	Other
<i>Lowest</i>	49.7	50.3	14.7	82.7	1.5	1.1
Males	59.9	40.1	13.9	83.5	1.7	1.0
Females	36.6	63.4	16.5	81.0	1.3	1.2
<i>Quintile 2</i>	50.5	49.5	11.6	85.4	2.0	1.0
Males	60.0	40.0	11.3	85.6	2.3	0.8
Females	39.6	60.4	12.1	85.1	1.4	1.4
<i>Quintile 3</i>	58.1	41.9	13.8	83.7	1.3	1.1
Males	68.4	31.6	12.9	84.6	1.5	1.1
Females	46.0	54.0	15.6	82.2	1.0	1.2
<i>Quintile 4</i>	61.4	38.6	14.9	82.6	1.4	1.1
Males	70.2	29.8	14.5	83.2	1.3	1.0
Females	50.8	49.2	15.7	81.5	1.5	1.3
<i>Highest</i>	62.3	37.8	22.5	75.1	1.4	1.0
Males	69.2	30.8	22.3	75.3	1.5	0.9
Females	53.3	46.7	22.8	74.7	1.3	1.1

Source: Pakistan Bureau of Statistics, PSLM Survey 2008/09.

**Table A5: Variables used to construct perceptions and awareness**


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<i>Parents' awareness of private schooling</i>	
pr2	Ever visited a private school
pr3	Knows of anyone who studies/has studied at a private school
pr4	Is aware of a private school in their village
pr5	Is aware of a private school in another village or region
<i>Parents' awareness of public schooling</i>	
pr6	Has ever visited a public school
pr7	Knows of anyone who studies/has studied at a public school
pr8	Is aware of a public school in their village
pr9	Is aware of a public school in another village or region
<i>Parents' perceptions of child quality</i>	
pc1	How intelligent is the child academically and otherwise?
pc2	How hardworking is the child academically and in other work?
<i>Parents' perceptions of school quality</i>	
pd1b	Quality of mathematics teaching
pd1c	Quality of English teaching
pd1d	Quality of science teaching
<i>Parents' perceptions of teacher quality</i>	
pe3	Child's class teacher's educational qualifications
pe5	How many days was class teacher absent in the past week?
pe6	How good are class teacher's teaching skills?
<i>Parents' perceptions of school's physical infrastructure</i>	
pf1	Condition of child's school building
pf3	Availability of a functional latrine
pf6	Does school have electricity?
pf7	Does school have water?
pf8	Does school have boundary walls?
<i>Parents' perceptions of child's safety</i>	
pf9	Does school have a gatekeeper?
pf10	Frequency of corporal punishment
pf11	Likelihood of peer harassment

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## Appendix B: Estimation Results

**Table B1: Determinants of enrolment**

<b>Determinant</b>	<b>Result</b>
Household size	0.00234 (0.00523)
Total number of children (5–18)	0.00456 (0.0101)
Wealth index	0.0521*** (0.0193)
Child labor	-0.0489* (0.0262)
Mother's education	0.0355*** (0.00746)
Father's education	0.0185*** (0.00369)
Gender	0.0965*** (0.0283)
Northern Punjab	0.181*** (0.0342)
Southern Punjab	-0.119*** (0.0354)
N	1108

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B2: Determinants of school choice (overall, by gender, and by schooling level)**

Determinant	(1) Overall	(2) Males	(3) Females	(4) Primary	(5) Middle	(6) High
Total children (5–18)	-0.034** (0.014)	-0.038** (0.019)	-0.033 (0.022)	-0.048** (0.019)	-0.047 (0.031)	0.048 (0.060)
Household size	-0.001 (0.007)	-0.012 (0.010)	0.005 (0.011)	-0.009 (0.010)	0.013 (0.014)	0.003 (0.028)
Socioeconomic status	0.057*** (0.016)	0.039* (0.020)	0.073*** (0.026)	0.057*** (0.021)	0.003 (0.032)	0.199*** (0.075)
Mother's education	0.003 (0.007)	0.012 (0.009)	-0.010 (0.010)	0.005 (0.009)	0.005 (0.014)	-0.029 (0.029)
Father's education	0.007 (0.005)	0.002 (0.006)	0.018** (0.008)	0.012* (0.007)	0.009 (0.009)	0.008 (0.021)
Gender	-0.570*** (0.131)			-0.585*** (0.193)	-0.640** (0.254)	-0.922*** (0.137)
Relative distance	-0.065*** (0.022)	0.030 (0.019)	-0.074*** (0.026)	-0.128*** (0.037)	-0.081* (0.045)	-0.018 (0.072)
Gender*access	0.101*** (0.029)			0.119*** (0.045)	0.104* (0.061)	0.156 (0.099)
Child's competence	0.029*** (0.009)	0.009 (0.011)	0.063*** (0.016)	0.011 (0.012)	0.014 (0.019)	0.102*** (0.037)
Subject quality	0.022** (0.010)	0.046*** (0.013)	-0.016 (0.016)	0.006 (0.013)	0.038** (0.019)	0.083** (0.042)
Teacher quality	0.031** (0.014)	0.024 (0.017)	0.035* (0.023)	0.022 (0.019)	0.031 (0.028)	0.084 (0.055)
Infrastructure quality	0.012 (0.014)	0.007 (0.017)	0.013 (0.026)	-0.005 (0.018)	-0.003 (0.039)	0.142** (0.066)
Child's safety	0.009 (0.009)	0.011 (0.012)	0.007 (0.016)	0.021* (0.012)	-0.009 (0.017)	0.001 (0.039)
Private education awareness	0.038*** (0.006)	0.027*** (0.007)	0.058*** (0.010)	0.047*** (0.008)	0.021* (0.012)	0.069** (0.030)
Northern Punjab	-0.127*** (0.044)	-0.106* (0.056)	-0.158** (0.069)	-0.089 (0.065)	-0.038 (0.085)	-0.360** (0.151)
Southern Punjab	-0.060 (0.055)	-0.111* (0.064)	0.002 (0.096)	-0.027 (0.071)	-0.081 (0.105)	
N	613	337	276	363	145	90

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B3: Parents' perceptions of employment opportunities and school choice**

<b>Determinant</b>	<b>Overall</b>		<b>Males</b>		<b>Females</b>	
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>
Total children (5–18)	-0.033** (0.016)	-0.032** (0.016)	-0.033* (0.020)	-0.033* (0.020)	-0.030 (0.028)	-0.026 (0.029)
Household size	-0.016* (0.009)	-0.015* (0.009)	-0.017 (0.012)	-0.014 (0.011)	-0.015 (0.014)	-0.014 (0.014)
Socioeconomic status	0.066*** (0.019)	0.042** (0.020)	0.054** (0.022)	0.022 (0.024)	0.091*** (0.035)	0.083** (0.035)
Mother's educ.	-0.005 (0.008)	-0.006 (0.008)	0.003 (0.010)	0.002 (0.010)	-0.018 (0.012)	-0.018 (0.012)
Father's educ.	0.009* (0.005)	0.010* (0.005)	0.003 (0.007)	0.004 (0.007)	0.021** (0.010)	0.022** (0.010)
Gender	-0.651*** (0.140)	-0.633*** (0.144)				
Relative distance	-0.054** (0.024)	-0.048** (0.023)	0.046** (0.021)	0.046** (0.021)	-0.069** (0.030)	-0.066** (0.030)
Gender*access	0.111*** (0.032)	0.105*** (0.032)				
Child's competence	0.030*** (0.010)	0.029*** (0.010)	0.016 (0.012)	0.016 (0.012)	0.067*** (0.021)	0.066*** (0.020)
Subject quality	0.031*** (0.011)	0.027** (0.011)	0.041*** (0.014)	0.034** (0.013)	0.009 (0.020)	0.008 (0.021)
Teacher quality	0.035** (0.016)	0.035** (0.016)	0.032* (0.018)	0.029 (0.018)	0.040 (0.032)	0.041 (0.032)
Infrastructure quality	0.022 (0.015)	0.025* (0.015)	0.009 (0.017)	0.012 (0.017)	0.048 (0.031)	0.050 (0.031)
Child's safety	0.023** (0.010)	0.021** (0.010)	0.019 (0.012)	0.019 (0.012)	0.029 (0.020)	0.027 (0.020)
Private education awareness	0.040*** (0.007)	0.039*** (0.007)	0.028*** (0.008)	0.027*** (0.008)	0.065*** (0.014)	0.063*** (0.014)
Job availability	-0.124** (0.051)	-0.399*** (0.058)	-0.098* (0.058)	-0.401*** (0.082)	-0.201** (0.098)	-0.387*** (0.099)
SES*job availability		0.161*** (0.053)		0.152*** (0.053)		0.138 (0.147)
Northern Punjab	-0.130*** (0.048)	-0.128*** (0.047)	-0.120** (0.058)	-0.124** (0.054)	-0.173** (0.083)	-0.164* (0.084)
Southern Punjab	-0.019 (0.070)	-0.010 (0.071)	-0.069 (0.079)	-0.053 (0.083)	0.027 (0.126)	0.027 (0.127)
N	490	490	292	292	198	198

Notes: Marginal effects reported. Standard errors are given in parentheses. \*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B4: Unbundling subject quality: Mathematics**

<b>Determinant</b>	<b>(1) Primary</b>	<b>(2) Middle</b>	<b>(3) High</b>
Total children (5–18)	-0.038** (0.017)	-0.045 (0.028)	0.047 (0.039)
Household size	-0.015* (0.009)	0.007 (0.014)	-0.025 (0.020)
Socioeconomic status	0.120*** (0.031)	0.046 (0.042)	0.192*** (0.072)
Mother's education	0.012 (0.008)	-0.006 (0.014)	-0.018 (0.020)
Father's education	0.010* (0.006)	0.009 (0.008)	0.008 (0.015)
Gender	-0.515*** (0.188)	-0.842*** (0.139)	-0.228 (0.447)
Relative distance	-0.104*** (0.033)	-0.096** (0.043)	0.124* (0.071)
Gender*access	0.104*** (0.040)	0.162*** (0.057)	-0.027 (0.084)
Northern Punjab	-0.038 (0.067)	-0.037 (0.085)	-0.243** (0.111)
Southern Punjab	-0.047 (0.060)	-0.022 (0.099)	-0.325*** (0.102)
Quality of mathematics teaching	-0.028 (0.027)	0.061* (0.040)	0.100* (0.064)
N	412	163	111

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B5: Unbundling subject quality: Science**

<b>Determinant</b>	<b>(1) Primary</b>	<b>(2) Middle</b>	<b>(3) High</b>
Total children (5–18)	-0.036** (0.017)	-0.046* (0.028)	0.028 (0.041)
Household size	-0.016* (0.009)	0.006 (0.014)	-0.020 (0.020)
Socioeconomic status	0.117*** (0.031)	0.045 (0.043)	0.191*** (0.071)
Mother's education	0.013 (0.008)	-0.007 (0.014)	-0.012 (0.020)
Father's education	0.010* (0.006)	0.010 (0.009)	0.006 (0.015)
Gender	-0.505*** (0.191)	-0.833*** (0.145)	-0.178 (0.468)
Relative distance	-0.104*** (0.033)	-0.093** (0.044)	0.133* (0.075)
Gender*access	0.101** (0.040)	0.159*** (0.058)	-0.041 (0.088)
Northern Punjab	-0.034 (0.067)	-0.042 (0.085)	-0.224* (0.114)
Southern Punjab	-0.049 (0.060)	-0.026 (0.100)	-0.307*** (0.111)
Quality of science teaching	-0.028 (0.028)	0.051 (0.044)	0.154** (0.068)
N	411	162	111

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.



**Table B6: Unbundling subject quality: English**

<b>Determinant</b>	<b>(1) Primary</b>	<b>(2) Middle</b>	<b>(3) High</b>
Total children (5–18)	-0.037** (0.017)	-0.044 (0.028)	0.056 (0.040)
Household size	-0.015* (0.009)	0.007 (0.014)	-0.030 (0.020)
Socioeconomic status	0.119*** (0.031)	0.045 (0.042)	0.209*** (0.073)
Mother's education	0.013 (0.008)	-0.006 (0.014)	-0.019 (0.020)
Father's education	0.010* (0.006)	0.010 (0.008)	0.010 (0.015)
Gender	-0.500*** (0.190)	-0.817*** (0.155)	-0.248 (0.462)
Relative distance	-0.103*** (0.033)	-0.091** (0.043)	0.116 (0.074)
Gender*access	0.101** (0.040)	0.151*** (0.057)	-0.035 (0.088)
Northern Punjab	-0.042 (0.066)	-0.031 (0.086)	-0.222* (0.116)
Southern Punjab	-0.053 (0.059)	-0.034 (0.097)	-0.297*** (0.110)
Quality of English teaching	-0.035 (0.025)	0.063* (0.036)	0.167*** (0.062)
N	412	163	111

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B7: Unbundling teacher quality: Importance of teaching skills**

<b>Determinant</b>	<b>(1) Primary</b>	<b>(2) Middle</b>	<b>(3) High</b>
Total children (5–18)	-0.044** (0.018)	-0.052* (0.030)	0.058 (0.042)
Household size	-0.014 (0.009)	0.007 (0.015)	-0.027 (0.021)
Socioeconomic status	0.120*** (0.032)	0.033 (0.045)	0.173** (0.076)
Mother's education	0.010 (0.008)	-0.005 (0.014)	-0.021 (0.021)
Father's education	0.011* (0.006)	0.010 (0.009)	0.013 (0.016)
Gender	-0.496** (0.195)	-0.824*** (0.151)	-0.363 (0.461)
Relative distance	-0.099*** (0.034)	-0.114** (0.044)	0.134* (0.076)
Gender*access	0.103** (0.042)	0.161*** (0.062)	-0.009 (0.090)
Northern Punjab	-0.011 (0.074)	-0.033 (0.090)	-0.197 (0.135)
Southern Punjab	-0.040 (0.063)	-0.024 (0.109)	-0.346*** (0.108)
Teaching skills	0.004 (0.030)	-0.036 (0.056)	0.181* (0.095)
N	392	155	106

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B8: Unbundling teacher quality: Importance of teacher's presence**

<b>Determinant</b>	<b>(1) Primary</b>	<b>(2) Middle</b>	<b>(3) High</b>
Total children (5–18)	-0.052*** (0.019)	-0.040 (0.030)	0.074* (0.044)
Household size	-0.013 (0.010)	0.007 (0.015)	-0.043* (0.025)
Socioeconomic status	0.125*** (0.035)	0.046 (0.046)	0.240*** (0.085)
Mother's education	0.012 (0.009)	-0.013 (0.015)	-0.055** (0.024)
Father's education	0.010 (0.006)	0.016* (0.009)	0.035** (0.018)
Gender	-0.534*** (0.190)	-0.807*** (0.163)	-0.555 (0.428)
Relative distance	-0.111*** (0.035)	-0.111** (0.044)	0.093 (0.081)
Gender*access	0.115*** (0.043)	0.152** (0.063)	0.030 (0.097)
Northern Punjab	-0.024 (0.074)	-0.044 (0.089)	-0.252** (0.124)
Southern Punjab	0.018 (0.075)	-0.065 (0.102)	-0.363*** (0.111)
Teacher's presence	0.091** (0.039)	-0.011 (0.078)	-0.309* (0.176)
N	369	145	94

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.

**Table B9: Unbundling infrastructure quality: Presence of boundary wall**

<b>Determinant</b>	<b>Primary (1)</b>	<b>Middle (2)</b>	<b>High (3)</b>
Total children (5–18)	-0.036** (0.017)	-0.048* (0.028)	0.064 (0.040)
Household size	-0.014 (0.009)	0.003 (0.014)	-0.022 (0.020)
Socioeconomic status	0.118*** (0.031)	0.044 (0.041)	0.209*** (0.070)
Mother's education	0.014* (0.008)	-0.004 (0.013)	-0.019 (0.018)
Father's education	0.009 (0.006)	0.006 (0.008)	0.013 (0.014)
Gender	-0.488** (0.190)	-0.847*** (0.133)	-0.323 (0.425)
Relative distance	-0.093*** (0.032)	-0.095** (0.042)	0.121* (0.064)
Gender*access	0.097** (0.039)	0.164*** (0.055)	-0.004 (0.080)
Northern Punjab	-0.067 (0.061)	-0.032 (0.084)	-0.195* (0.113)
Southern Punjab	-0.047 (0.059)	-0.020 (0.098)	-0.211 (0.132)
Boundary wall	-0.011 (0.038)	0.150* (0.081)	0.516*** (0.147)
Gender*boundary wall			
N	421	166	116

Notes: Marginal effects reported. Standard errors are given in parentheses.

\*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Regressions incorporating the presence of a toilet facility did not yield any significant results, and have therefore not been reported.

Source: Authors' calculations.

**Table B10: Relative schooling expenditure and school choice**

Determinant	Overall (1)	Males (2)	Females (3)	Primary (4)	Middle (5)	High (6)
Total children (5–18)	-0.009 (0.017)	-0.029 (0.022)	0.013 (0.027)	-0.014 (0.023)	-0.036 (0.034)	0.177 (0.141)
Household size	-0.013 (0.009)	-0.020* (0.012)	-0.013 (0.013)	-0.031** (0.013)	0.008 (0.016)	-0.024 (0.047)
Socioeconomic status	0.050*** (0.019)	0.040* (0.024)	0.072** (0.032)	0.054** (0.024)	-0.012 (0.037)	0.329** (0.160)
Mother's education	0.008 (0.008)	0.013 (0.012)	0.003 (0.013)	0.008 (0.011)	0.024 (0.018)	-0.067 (0.047)
Father's education	0.004 (0.006)	-0.003 (0.008)	0.019** (0.009)	0.009 (0.008)	0.000 (0.010)	0.051 (0.040)
Gender	-0.585*** (0.153)			-0.584*** (0.217)	-0.776*** (0.224)	-0.972*** (0.106)
Relative distance	-0.060** (0.027)	0.039 (0.024)	-0.056* (0.033)	-0.110*** (0.042)	-0.063 (0.052)	0.015 (0.169)
Gender*access	0.107*** (0.036)			0.119** (0.051)	0.170** (0.075)	0.140 (0.230)
Child's competence	0.046*** (0.012)	0.028** (0.014)	0.087*** (0.021)	0.031** (0.015)	0.013 (0.024)	0.147* (0.086)
Subject quality	0.006 (0.012)	0.037** (0.016)	-0.049** (0.020)	-0.011 (0.016)	0.041* (0.023)	0.016 (0.062)
Teacher quality	0.032* (0.017)	0.025 (0.021)	0.054* (0.030)	0.026 (0.023)	0.033 (0.033)	0.066 (0.101)
Infrastructure quality	0.025 (0.017)	0.012 (0.019)	0.036 (0.035)	0.015 (0.021)	0.009 (0.042)	0.305** (0.155)
Child's safety	0.013 (0.011)	0.011 (0.014)	0.025 (0.020)	0.020 (0.015)	-0.007 (0.020)	-0.078 (0.103)
Private education awareness	0.045*** (0.007)	0.032*** (0.009)	0.085*** (0.014)	0.055*** (0.009)	0.033** (0.014)	0.045 (0.076)
Relative expenditure	-0.041 (0.034)	-0.015 (0.040)	-0.127* (0.069)	-0.086** (0.041)	-0.177** (0.088)	-0.183** (0.091)
Northern Punjab	-0.092* (0.054)	-0.066 (0.074)	-0.146* (0.078)	-0.044 (0.079)	-0.010 (0.103)	-0.429 (0.278)
Southern Punjab	-0.112 (0.069)	-0.214*** (0.070)	0.060 (0.139)	-0.090 (0.095)	0.094 (0.189)	
N	467	256	211	277	115	68

Notes: Marginal effects reported. Standard errors are given in parentheses. \*, \*\*, and \*\*\* denote 10, 5, and 1 percent significance levels, respectively.

Source: Authors' calculations.



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