Centre for Research in Economics and Business (CREB)

Lahore School of Economics

DETERMINANTS OF SCHOOL CHOICE: EVIDENCE FROM RURAL PUNJAB

Research Team

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1.0 Introduction and Objective of The Study

1. Many developing countries have experienced a surge in low fee private schooling in response to the inadequate supply and low standard of government schools.[1] Pakistan is no exception. With shrinking education budgets and weak commitment to education reforms, there is an increased demand for private schooling among the rural poor. Up to 15% of school age enrollments in rural Pakistan are in private schools. Punjab has the highest rural private enrollments at 23% while Sindh and Baluchistan have the lowest private enrollments.[2]

2. Pakistan is also an outlier in terms of gender gaps in education. A pro-male bias of an order of 15% in gross enrollment at the primary level and 7% at the secondary level existed in 2009. Comparator countries have been much more successful in improving female enrollment rates at the primary and secondary levels of education.[3] However trends in private enrollments 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.

3. Under article 25-A of the 18th amendment to the constitution, education was made a fundamental right of every school age child in Pakistan. But the current bleak educational status of the country indicates that guaranteeing this right remains an important challenge. Pakistan's gross enrollments in 2009 of 85%, 33% and 6% at the primary, secondary and tertiary levels are the lowest in South Asia and this low ranking has persisted for over ten years.[4] Moreover, public expenditure on education has been declining instead of increasing (from 2.2% in 2005-2006 to 2% in 2009-2010).[5]

4. Since many Pakistani parents have the option of private schooling available to them, it is important to study how private schools are responding to parental demand for education. A host of child, household and school-specific factors are expected to influence parents' decision to send children to a private or public school. An analysis of these factors would help to 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 reasons for parents' schooling decision would help in policies aimed at improving quality in public and private schools.

1.1 Main Research Questions

1. This study addresses the following overarching question: Why do parents choose low cost [6] private schools when free public schools are available? The main emphasis of the study in answering this question will be on the role of parents' perceptions in school choice while controlling for a range of child, household and school specific characteristics.

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[1] Muralidharan & Kremer (2007). In comparison, in most developed countries due to substantial public investment in education, private school enrollments amount to only about 3% of total enrollments.(Checchi et al. 2004)

[2] PSLM 2008-09 illustrated in Table A2, Annexure A.

[3] Gender gaps in enrollments for Pakistan compared to other South Asian countries are given in Table A1, Annexure A.

[4] Pakistan's enrollments in 2009 of 85%, 33% and 6% at the primary, secondary and tertiary levels are the lowest in South Asia and the low ranking has persisted for over ten years (*World Development indicators, 2010*).

[5] Economic Survey 2009-2010

[6] In a nationwide census of private schools in 2000, the fee in the median rural private school was Rs.60 per month (50 percent of all private schools charge lower fees). Moreover, according to the LEAPS Report (2008), "the overall cost of educating a child in the median rural private school was Rs.1000 or $15 a year."

2. Existing literature on the topic argues that school choice behavior may be driven by demand side determinants, supply side determinants or both. The former entails child-specific (such as age, gender, and intelligence), parent-specific (education, awareness) and household-specific (income, wealth) characteristics. Supply side factors on the other hand would typically include school specific characteristics such as quality, distance, type i.e. whether or not it is English medium, private or public, co-educational or single-sex. Although the education literature has discussed demand side and supply side factors the focus has not been on parents' perceptions regarding the alternative education options available to them in making school choices.

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

4. 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. And if a choice exists then what prominent factors influence the preference for private schooling relative to existing public schools.

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

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

7. The study is based on primary data collection. A survey (Privatization in Education Research Initiative (PERI) School Choice Survey) was conducted in selected rural *tehsils*[7] of 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 1024 households and 257 schools. Detailed information about the survey and the sampling methodology are given in Section 2 of the report.

8. The scope of this study is limited to selected *tehsils* within Punjab. Of all the four provinces, Punjab has been chosen on two accounts: 1) The spread of private schooling has been most widespread in

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[7] Pakistan comprises of four provinces namely Punjab, Sind, KP and Balochistan. Each province is divided into divisions while each division is sub-divided into districts. Each district is further divided into tehsils/talukas. For purposes of revenue collection and administration, tehsils are sub-divided into patwar circles and mauzas which are further divided into villages in rural areas. Thus a tehsil is an administrative sub-unit of a district.

Punjab compared to all other provinces; almost one fourth of all school-going children in the 5-18 age bracket are enrolled in private schools in Punjab compared to one-fifth in KP and one-twentieth in Sind and Baluchistan (Table A2, Annexure A); 2) It is the largest province in terms of population, and therefore representative of educational trends at the national level.

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

1.2 PRIVATE SCHOOLING IN RURAL[8] PAKISTAN

1. This section of the report will shed light on the overall state of public and private education in rural[9] Pakistan as illustrated by the Pakistan Social and Living Standards Survey (PSLM). The sample under study comprises of children in the 5-18 age bracket. From this point onwards, all statistics reported refer to children in this age bracket, residing in rural areas.

2. In rural Pakistan, only 54% of children are enrolled in school (such as private, public, madrassas, community, NGO, and trust schools)[10] This implies one out of every two children is out of school in rural Pakistan. Female indicators are even worse. Compared to males, a greater percentage of girls are out of school. More precisely, a gender gap of 21% (between male and female enrollment rate) is prevalent in the schooling decision (Table A2, Annexure A)

3. Traditionally, private education has been considered the prerogative of rich urban dwellers. A private-public sector disaggregated analysis of enrollment rates in rural Pakistan however suggests that this notion is misleading. Private schooling is important not just for the rich but also plays an important role for the poor strata of the population residing in rural areas of Pakistan[11]. While the public sector is the main provider of education services, the role of private schooling appears to be substantial; 15% all children are enrolled in private schools in rural Pakistan (Table A2, Annexure A).

4. While enrollment in private schools has increased, the spread of private schooling has been uneven across the country. Across provinces, private school enrollment is most widespread in Punjab; approximately 23.4% of all school-going children in the province attend private schools as opposed to 17% in Khyber Pakhtunkhwa [KP] (Table A2, Annexure A) However, private school enrollment

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[8] The sampling frame of the rural domain consists of a list of villages/mouzas/dehs prepared during the 1998 Population Census according to which all localities with large population agglomeration (and were either metropolitan corporations, municipal corporations, municipal committees, town committees or cantonments) were treated as urban while all other areas were treated as rural.

[9] The Pakistan Social and Living Standards (PSLM) Survey is based on both urban and rural areas of Pakistan. These areas have been classified according to the definition above. For calculating the numbers reported here, the PSLM sample was restricted to the rural sub-sample only.

[10] While it would be interesting to identify the share of children going to low-fee private schools within the pool of private school going children but unfortunately the data allows us to determine the overall private school going sample only.

[11] The sample of households under study has been divided into quintiles on the basis of the wealth score. Details of how this score was calculated are given in section 4. The bottom 20% of the households which had the lowest wealth score represent the poorest segment of the population while the top 20% of the households which had the highest wealth score represent the richest segment of the population.

is much more limited in Sind and Baluchistan where the main supplier of education services is the public sector.

5. Within Punjab, the spread of private schooling has been uneven. A much greater percentage of children are attending private schools in the North and Center as compared to the South and West (Table A3, Annexure A).

6. Incorporating the gender dimension reveals that compared to males, females are more likely to receive private schooling[12] in rural Pakistan. Inter-provincial numbers show that this trend is largely driven by Punjab (Table A2, Annexure A). An analysis by socio-economic status shows that this is true for all quintiles, except for the top 20% of the population, where both males and females have an almost equal chance of attending a private school (Table A4, Annexure A).

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[12] Private schooling refers to enrollment in private schools and does not include home schooling or tutoring.

1.3 BACKGROUND LITERATURE REVIEW

This section of the report will discuss factors that may 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

1. During 2000-2005 private school enrollment in Pakistan is estimated to have increased at 62% compared to 17% in public schools.[13] Rapid growth of private schools is also visible in other developing countries. Srivastava (2007) points out that Uttar Pradesh, one of the most educationally backward states in India, has a private school enrollment of 57.6%, the second highest in the country. Muralidharan et al. (2006) note that nearly 30% 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 one-fifth of all students at both primary and secondary level in Bolivia were enrolled in private schools.[14]

2. The education literature indicates that private schools in developing countries including Pakistan do not necessarily have an elite-bias and a range of low fee charging schools exists to cater to the rural poor. Several characteristics may be responsible for making private schooling more attractive for parents compared to government schools such as better test-scores, use of English as a medium of instruction, better physical infrastructure and lower rates of teacher absenteeism.[15]

1.3.2 SCHOOL AND TEACHER QUALITY FACTORS INFLUENCING SCHOOL CHOICE

1. *Lower teacher absenteeism and better teacher accountability in private schools*: In the private sector, teacher remuneration is linked more closely to student outcomes and failure to meet certain standards can result in dismissal from the job, unlike the public sector.[16] In India, Muralidharan et al. (2006) show that "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.

2. *Availability of local female secondary school graduates in Pakistan*: It is 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.[17] According to Andrabi et al. (2010b), the establishment of private primary schools in rural Punjab may depend on the existence of government girls' secondary school 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.[18]

3. *English as a medium of instruction*: Research indicates that most of the learning gaps exist due the variation in quality across schools and the learning gap between Pakistan's public and private schools

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[13] Andrabi et al. (2007)
[14] Psacharopoulos et al. (1997)
[15] Harlech-Jones et al. (2005), Rehman et al. (2010), Srivastava (2007), Das et al. (2006), Muralidharan et al. (2006)
[16] Bari (2011) argues that most appointments of public school teachers take place through "patron-client" networks and the rewards of these teachers are not tied to performance. In fact, public school teachers are frequently deployed during census, elections and vaccination duties and may not even bother coming to school.
[17] Andrabi et. al. (2010a)
[18] Lloyd et al. (2005)

in rural areas is highest for English (Das et al. (2006). .Harlech-Jones et al. (2005) suggest that having English as a medium of instruction in private schools is critical in parents' school choice. Because knowledge of English may be important in obtaining certain types of employment such as the civil service and Army jobs in Pakistan, parents would be attracted to the availability of English as a medium of instruction in private schools. Other studies also suggest that parents might be paying less attention to the curriculum but opt for the school if it is branded as English medium (Siddiqui, 2010).

4. *Higher test scores in private schools, smaller class size and better infrastructure in private schools:* According to the LEAPS study, test scores for primary students were higher for private than for public school children. Das et. al. (2006) showed that the gap in test scores for third grade English between private and public schools in selected districts in Pakistan is 12 times greater than the test score gap between children from wealthier and poorer families.   In a study for India, Srivastava (2007) discusses that most households had the perception that low-fee private schooling was a pre-requisite 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 to be better equipped at providing their children with the necessary skills to secure improved future employment prospects. Moreover, Lloyd et al (2005) point out that private schools have more teachers and a smaller class size, which reduces the teaching load for a given teacher. [19] Differences in infrastructure in private versus public schools can also influence school choice. The literature has reported a positive influence of amenities such as boundary walls   and latrines in determining parents' schooling decisions for their children, and especially for their daughters (World Bank, 1996; ASER, 2010).

1.3.3 HOUSEHOLD AND CHILD RELATED FACTORS INFLUENCING SCHOOL CHOICE

1. *Household income/wealth and the cost of schooling:* Several studies show family income to significantly affect child enrollment.[20] It is important to recognize that even if public schools are free, parents still incur a cost to send their child to school.[21] The cost of uniforms, books, stationery coupled with the opportunity cost of not having the child to help in household chores makes family income an important determinant of school enrollment.[22]The cost of schooling is an important barrier that may prevent a child from being enrolled in a private school. If the cost of schooling is comprised of all expenditures including schooling fee, tuition fee, pocket money, cost of uniforms, books and transportation costs then the lower cost private schools could have a cost structure similar to that of public schools. Andrabi et al. (2007) showed the median rural private school charged a fee to be as low as Rs. 60 per month (less than $1), indicating that in terms of cost private schools are expected to compete effectively with public schools. In order to stay competitive, the study shows that private schools are earning very low profits (Rs. 14,000 per year). In another study by Muralidharan et al. (2006) the monthly revenue of a private school in India was Rs. 4,000 per month on average and the median fee was Rs. 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.

2. *The effect of parents' education*: Another attribute that strongly affects child enrollment and school choice is parents' education.[23] One channel through which parents' education affects school choice is that an educated parent has a better chance to make an assessment of the quality of a school.[24] In their study of 290 schools in India, Dreze et al. (2001) show that parental education comes out to be a

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[19]Lloyd et al. (2005).

[20]Andrabi et al. (2006), Alderman et al. (2001), Sathar (1994), Burney et al. (1995) & Lloyd et al. (2005).

[21] Alderman et al. (2001)

[22] 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 enrollment in a private school can improve employment prospects (Andrabi et al. 2007).

[23]Iram et al. (2008). Lloyd et al. (2005),

[24]Andrabi et al. (2002).

strong predictor for school attendance, with intergenerational same-sex effects being stronger than cross-sex effects.[25] 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 more educated parents will send their children to private schools and not public schools, if they perceive the former to be of a higher quality.

3. *Distance to school*: Studies show that in Pakistan parents may be more comfortable sending their sons to a school that is near the outskirts of the village rather than daughters.[26] However, the presence of an elder male sibling could mitigate the "distance penalty" for a sister. The LEAPS (2007) study points out that the actual impact of distance on school choice depends upon the type of household making the schooling decision. For instance, if the household is "quality conscious" then they might even prefer sending the girl to a private school that is at a distance of two kilometer, rather than a public school which is closer and 500 meters away.

4. *Child and household characteristics*: The literature shows that even poor parents are opting for private schools and this "voting with their feet" phenomenon may 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 parents of private school going children are more pro-active 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.[27]

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[25]Dreze et al. (2001)
[26]Lloyd et al. (2009), Andrabi et al. (2007)
[27] Das et al. (2006), Muralidharan et al. (2006).

2.0 SURVEY AND DATA COLLECTION

2.1 THE PERI SURVEY

1. The Privatization in Education Research Initiative (PERI) School Choice Survey was conducted in April 2011 by the Lahore School of Economics, in collaboration with the Punjab Bureau of Statistics in 7 rural districts of Punjab (1 district was from North Punjab, 4 from Central Punjab and 2 from South Punjab).[28] A total of 1024 households were surveyed in 64 clusters spanning over 8 *tehsils* in 7 districts. These households are a subsample of the households surveyed under the Multiple Indicator Cluster Survey (MICS) 2007-08, thus allowing the construction of a panel dataset.

2.2 SAMPLING METHODOLOGY[29]

1. The PERI education survey sample is a sub-sample from the latest round of Multiple Indicator Cluster Survey (MICS) conducted by the Government of the Punjab (GOP) in collaboration with UNICEF and the Federal Bureau of Statistics (FBS). The first round of MICS (2003-04) was the first ever survey representative at the district level conducted by the Government of Punjab, while the latest MICS survey (2007-08) is representative at the District and *Tehsil* (sub-district) levels.

2. The sampling methodology of the PERI education survey was defined according to the 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 using the segmentation method followed by Cheema et al. (2008). Since Western Punjab has been severely affected by the 2010 floods, it would not be representative of normal conditions in the area and has been excluded from the sample. Annexure C provides the classification of different *tehsils* in their respective sub-regions.

3. Simply excluding the urban *tehsils* in the MICS 2007-08 survey was not considered sufficient for a representation of rural households because some *tehsils* may be peri-urban. Therefore *tehsils* that have rural population 2 standard deviations below the average rural proportion in Punjab were excluded from the target population. Thus, *tehsils* with less than 32.5% of rural population were excluded from the sample.

4. Southern Punjab is historically a deprived region in terms of socio-economic conditions and access to public services. Private enrollment in the southern region is relatively low compared to other regions of the province.[30] Therefore, South Punjab was further divided into two regions on the basis of private school availability whereby a private enrollment threshold of 20% was used as a proxy for availability of choice. The main objective of this exercise was to avoid surveying a 'no choice' area as this would have defeated the study objective i.e. to examine parents' school choice behavior between private and public schools. Table C2, Annexure C provides the list of *tehsils* that fall under these two classifications.

5. Having defined our target population in four rural regions of Central, Northern, Southern with <20% enrollment and Southern with >=20% enrollment, the next step is to select a representative sample using appropriate sampling technique. Our sampling approach is a multi-stage sampling with stratified sampling approach with allocation of sample size proportional to the size of the stratum at the first stage. The second stage is a simple random sampling approach with probability proportional to size.

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[28] The study uses the regional classification given in Cheema et al. (2008) for Punjab.

[29] For details on sampling strategy, refer to Annexure C.

[30] For instance, according to the Annual Status of Education Report (2010), between 6-16 years of age, 25.3% of all children between 6 to 16 years of age are enrolled in private schools in rural Faisalabad which falls in the Center, and 25.7% are enrolled in private schools in rural Rawalpindi, which falls in the North. On the contrary, only 14.1% of all children between 6 to 16 years of age are enrolled in private schools in rural Rahim Yaar Khan (which falls in the South).

6. The details of the selected *tehsils* and their respective number of clusters surveyed during the MICS 2007-08 round have been provided below. The number of clusters sampled for current study and the proportion of sample has also been included here (Table 2.2.1).

Table 2.2.1: Sample Composition

Region	District	Tehsil/ Town	No. Of Rural Clusters in MICS 2007-08	No. Selected Clusters	% Sample
Northern Punjab	Chakwal	Talagang	24	9	37.5
Central Punjab	Hafizabad	Hafizabad	26	8	30.8
Central Punjab	Faisalabad	Jinnah Town	15	5	33.3
Central Punjab	Nankana Sahib	Sangla Hill	21	7	33.3
Central Punjab	Jhang	Jhang	47	15	31.9
Southern Punjab	Bahawalpur	Bahawalpur Sadar	42	7	16.7
Southern Punjab	Khanewal	MianChannu	49	9	18.4
Southern Punjab	Bahawalpur	KhairpurTamewali	21	4	19.0
			245	64	100

2.3 SURVEY QUESTIONNAIRE

1. The survey questionnaire comprised three parts. Part 1 entailed collecting background information on 16 households in each cluster.[31] Part II consisted of questions addressed to parents on school choice for children ages 3-18 and Part III collected information on private and public schools in each cluster. Questionnaires used in the PERI School Choice Survey 2011 are given in Annexure D.

2. In Part I of the questionnaire, information for each household member was collected such as age, gender, marital status, relationship to the household head, literacy level (for individuals 10 years and above), income level, health status. Information on various characteristics of the household was also collected such as type of dwelling (i.e. *katcha, pakka*[32], area and value of house etc.) ownership of possessions[33] as well as ownership of land (its area, value and type i.e. arid, barren, irrigated etc.) and animals, access to utilities (i.e. gas, electricity, water etc.), additional sources of household income (i.e. remittances, transfers, pension benefits etc.) so as to gauge the wealth status of the household. For 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.

3. Part II of the questionnaire consisted of collecting detailed information on all children ranging between 3 to 18 years of age (inclusive) in the surveyed households. The pre-condition for conducting this part of the questionnaire was that only a parent, either the mother or the father of the respective child should be the respondent. In line with the survey objectives, detailed information was collected on the perceptions of parents of 1856 children on various dimensions of their child's schooling such

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[31] The refusal rate was low- 0.6% of the households in our sample refused to take the interview. However, 8.35% of the households were not surveyed either because they had migrated/ house not found/respondents were not home

[32] Katcha refers to rudimentary floor while pakka refers to a floor made of bricks, cement,marble chips, tiles or marble.

[33] These included radio, television, cable, 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 some other vehicle etc.

as quality of child (whether he is hardworking and intelligent), the infrastructure and amenities at their child's school, teacher absenteeism and educational qualifications, and school's academic quality. Questions were also addressed regarding benefits of education and employment opportunities available to the child as perceived by his/her parents. Information was also gathered on school-switching behavior, physical access to schools and expenditure incurred by parents on their child's education. Modules on child labor and women empowerment were also included.

4. Part III of the questionnaire aimed to assess the supply of schooling and gathered available information on the public/private schools in the cluster. School characteristics such as medium of instruction, number of teachers and their qualifications, total (class-wise and gender-wise) enrollment and school infrastructure were surveyed. Questions about the community were also addressed such as presence of a factory and training institutions to get an idea of opportunities available to the residents.

5. In line with survey objectives, i.e. to assess the role of parents' perceptions in shaping school choice, a pre-condition for conducting the household survey was that the child's parent; (either the mother or the father) should be the respondent. Therefore information was not collected for children whose parents' were not available. [34]

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[34] 19% of the parents did not answer Part II of the questionnaire. To ensure there was no systematic bias between parents who gave responses and those who did not, differences on observable characteristics such as employment, education, and wealth were tested. We find there was no statistically significant difference between the samples of parents.

3.0 DATA

3.1 THE PERI DATA SET

1. The study is based on a School Choice survey conducted by the Lahore School of Economics in collaboration with the Bureau of Statistics in April 2011. The survey was undertaken across three regions of Punjab: North, Center and South. The parents[35] of a total of 1856 children between 3 to 18 years of age (inclusive) were surveyed[36], of which 1174 are currently enrolled in school and 682 are at present out of school. For the rest of the paper, however, the working sample will comprise 1543 children between 5 to 18 years of age, inclusive.[37] 73% of this working sample consists of children in the 5-14, while the rest fall in the 15-18 age brackets. As for gender composition, 52% are males while 48% are females.

3.2 AN OVERVIEW OF THE PERI SAMPLE: PUBLIC AND PRIVATE SCHOOLING

1. As shown in Table 3.2.1, 33% of all children in the (5-18) age bracket are currently out of school. Of these, 17.9% have never attended while 15.4% have dropped out of school. The public sector is the main provider of education services in rural areas. Enrollment in Madrassas and other types of schools is relatively low at 0.3% and 3.4% respectively.

Table 3.2.1: The PERI Sample: Overall Enrollment by Gender and Type of School (%)

	In School*	Out of School*		Type of School**			
	Enrolled	Never Attended	Drop-outs	Private	Government	Madrassas	Others [a]
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

*% of children, **% of enrolled children *Source: PERI School Choice Survey, 2011*
[a] The 'Others' category includes Foundation Assisted Schools, Trust Schools, Vocational and Technical training schools.

2. The private sector plays a significant role in providing education services for the area under study; almost 27% of all enrolled children are currently attending private schools (Table 3.2.1).

3. Table 3.2.1 also shows that private school enrollments are higher among females than males even though overall female enrollments are lower and the proportion of females who never attended school are higher relative to males. Male enrollment is 9% points higher than female enrollment for our sample. Moreover, compared to males, a much greater percentage of females are out of school (37.9% compared to 29.1% of males) either because they have never attended or because they have dropped out.

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[35] This amounted to a total of 640 parents.

[36] Out of the total sample of children between 3 to 18 years of age, 13% (233) are less than 5 years of age. Of these, 28% of the children are currently enrolled in school.

[37] After dropping children below the age of 5, 80 children were still found to be enrolled in pre-school so they were also excluded from the analysis.

4. By type and level of schooling[38], Table 3.2.2 below reveals that private schools are catering to all levels of schooling even in rural areas of Punjab. One fourth of all enrolled children at the primary and middle level are attending private schools. What is interesting to note is that this proportion increases for high school, whereby one third of all enrolled children are attending private schools. Thus, contrary to commonly held view that private schools are only catering to the primary level, it appears that the private sector, in fact, has a much broader outreach even in rural areas of the province.

Table 3.2.2: Gender Disaggregated Enrollment Patterns [5-18] by Level of Schooling (%)

	Type of School**			
	(1)	(2)	(3)	(4)
	Private	Government	Madrassas	Others[39]
Primary	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
Middle	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
High	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

Source: PERI School Choice Survey, 2011

5. An examination of gender-disaggregated data by level of schooling shows that for girls, private enrollment increases and public enrollment declines with the level of schooling. At the high school level, more than twice the number of females than males attended private schools.

6. Private, public and out-of-school enrollments will possibly be influenced by differences in parent-specific characteristics such as education levels, their awareness about education and their perceptions about the school in which their child is studying. To that end, descriptive statistics for each of these categories are presented in Table 3.2.3.

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[38] It is worth mentioning that gross and net enrollment rates will be different for each category, as children are attending a different level of school from their respective age bracket. For instance, 12.7% of children in the 5-9 age bracket are enrolled in pre-school, while 1.8% are enrolled in middle school. Moreover, 44% of males and 35% of females in the 10-14 age group are enrolled in primary school and 8% are in high school.

[39] These include Trust, Foundation assisted and Community schools.

Table 3.2.3: Descriptive Statistics by Private, Public and Out-of-School Children[i]

	Private	Public	Out-of-School
Parents Awareness			
Awareness about Private Education	7.78	5.72	5.03
Parents Perceptions[ii]			
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
Parents factual			
Average years of schooling (mother)	3	1	0.4
Average years of schooling (father)	6	4	2
Household			
Wealth Index	2.42	1.95	1.70

Source: PERI School Choice Survey, 2011
[i] The indices on parents' perceptions, awareness and wealth were scaled to lie between zero and ten for comparability.
[ii] The methodology used in construction of these perception variables is shown in Box 4.1.

7. Descriptive statistics by private, public and out of school children in Table 3.2.3 show that parents of private school going children are more educated compared to parents of public and out-of school children. They have a greater awareness about private education, and they perceive their children to be more intelligent and hardworking compared to parents whose children are going to public schools. Moreover, parents of private school going children perceive their children's schools (i.e. private schools) to have a higher academic quality, better teachers as well as better infrastructure.

4.0 METHODOLOGY

1. This analysis seeks to answer the 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 years children enrolled in private or public schools at the primary, secondary or high level of schooling.[40] Moreover, this sample is restricted to only 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 going to a private school in that cluster.[41] From the working sample of 1543 children, 254 were excluded because they belonged to a 'no choice' area. This yielded a sample of 1289 children of which 889 were enrolled in school and 400 were at present out-of-school. Out of the 889 children currently enrolled in school, 42 were attending schools other than public or private schools[42], thus leaving a working sample of 847 children.

2. In our working sample of 847 children, 264 children are enrolled in private and 583 in public schools. 520 (60%), 204 (24%) and 140 (16%) of these children are enrolled at the primary, middle and high level of schooling respectively.

3. In order to answer the research question, investigation is carried out in three stages. The first stage entails employing an aggregated approach to get a broad overview of the determinants of school choice for the pooled sample. As a second step, the analysis is enriched by undertaking two distinct types of disaggregation: one at the gender level to capture the differences in private school enrollment of males and females, and second at levels of schooling to gauge how enrollment patterns in private school change across the primary, middle and high tier of schooling. Finally, as a third step, 'unbundling' of school quality is undertaken i.e. we attempt to split the indices on school quality into its components and quantify the impact of each factor on school choice across the three tiers of schooling.

4. Thus to understand what determines school choice in a rural setting, the 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 regards to their child's quality, the quality of the school the child attends and employment opportunities available for their child. To that end, the following probability choice model was specified:

$$Prob(S_{ik} = 1 | P, A, X)$$
$$= \gamma + \sum_{n=1}^{4} \beta_n (PS_{kn}^{pvt} - PS_{kn}^{pub}) + \beta_5 (PC_k^{pvt} - PC_k^{pub}) + + \beta_6 (A_k^{pvt}) + \beta X + \varepsilon_{ik}$$

Where S is a dummy variable which is equal to one if child *I* of parents' *k* is enrolled in a private school and 0 if the child is enrolled in a public school. The variable of interest is parents' perceptions regarding the child's school *(PS)*. Since the objective is to study attractiveness of private schools *relative* to public schools, the variable of interest takes a difference form in order to account for the *'relativity'* aspect. Thus, $PC_k^{pvt} (PS_k^{pvt})$ measures parent k's perceptions about the competence of child going to a private school (quality of private school) while PC_k^{pub} (PS_k^{pub}) represents competence of child going to a public school (quality of public school). Since it is a child-level

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[40] Children aged less than 5 have been dropped from the analysis.
[41] 11 clusters are dropped from the analysis because of absence of any choice. These were the clusters without a private school.
[42] These entail Madrassas, Trust, Foundation assisted and Community Schools.

analysis and the sample under study comprises private and public school going children only, so if child i is enrolled in a private school, the counterfactual will refer to a public school and vice versa.

5. For all children going to school, the counterfactual is constructed using a *tehsil*-specific mean[43] of the perception of all parents whose children are attending the alternative school type. For instance if child i is attending a private (public) school, PC_k^{pub} (PC_k^{pvt}) will be obtained for that child using the *tehsil*-specific mean perceptions of all parents whose children are attending a public (private) school. Similarly for a child i attending a private (public) school, PS_k^{pub} (PS_k^{pvt}) will represent mean perceptions of all parents in that *tehsil* regarding the quality of the public (private) schools in which their children are enrolled.

6. The child competence *(PC)* is an index obtained through principal component analysis. It is based on (i) parents rating of the child's intelligence level and (ii) their opinion about how hard working the child is, in studies as well as in his daily life. On each of these questions, parents could rate the child on the following scale: Below Average, Average or Above average.

7. The quality of school that the child is enrolled in, on the other hand, has been quantified along n various dimensions. These include quality of subject teaching, quality of the child's class teacher, school infrastructure and child's safety at school. For each of these dimensions, an index has been constructed using principal component analysis (pca)[44] due to the presence of high correlation amongst the individual elements. Further details on each of these indices are given in Box 4.1.

Box 4.1: Indices on Parents' Perceptions about School Quality Measure:

Quality of Subject Teaching: The index is based on parents rating of Mathematics teaching, English teaching and Science teaching in their child's school on a scale of 1 to 3 where 1 refers to poor while 3 refers to excellent.

Teacher Quality: The index is based on the quality of class teacher's teaching and captures three dimensions: (a) parents' knowledge about the teacher's educational qualification, (b) their opinion about the teacher's regularity and (c) their rating of the teacher's teaching skills on a scale of 1 to 4 where 1 refers to poor, 2; average, 3; above average and 4; excellent.

School Infrastructure Quality: The index is based on five measures: (a) parents' observation about the condition of school building as well as parent's knowledge about whether the school has (b) a boundary wall, (c) a functional latrine, (d) electricity, and (e) water.

Child Safety: The index is based on parents' knowledge of whether the child's school has a gate-keeper. In addition it is based on their perceptions regarding the frequency of corporeal punishment and the likelihood of harassment by fellow students.

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, Annexure A.

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[43] Another possibility was to use cluster-specific means instead. However, since our variables of interest: the parents' perceptions take a differenced form and due to small geographic size of a cluster, using cluster-means may not allow greater variation in the independent variables. Thus tehsil-specific means have been employed for all perception variables.

[44] To make all of the perceptions indices (generated by means of principal component analysis) comparable, they were rescaled to lie between zero and ten.

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

9. A_k^{pvt} quantifies child i's parents' awareness with regards to private education. Like the indices for child competence and school quality, "pca" has been used for purposes of constructing these indices. The index is based on various indicators which may be reflective of the extent to which child i's parents' are aware of private schools. These indicators include (a) whether the parent has ever visited a private school (b) whether the parent knows of anyone (apart from his/her own children) who studies or studied in a private school (c) whether the parent knows of a private a school in the village (d) whether the parent knows of a private school in another village or area. It is expected that parents generally know about public education due to wide availability of government schools. On the other hand, private schools being a more recent phenomenon and relatively few in number relative to public schools, they 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 with regards to private schooling affects private school choice.

10. X is a vector of child specific, parent specific and household specific controls. This includes child's gender (equal to one for males and zero for females), mother's education and father's education as given by completed years of schooling, total children in the household as well as household size.

11. In order to take into account the household's socio-economic status in X, it was possible to include the total income of the household reported from various sources. However, income being a noisy measure, we chose to construct a wealth index using the information on household goods and amenities[45] (Box 4.2). Furthermore, wealth quintiles for the household were computed from the distribution of wealth index.

> **Box 4.2: The Wealth Index**
>
> Wealth index was employed as a measure of socio-economic status of the households by performing principal components analysis. The variables used in its construction were: rooms per capita, material used for wall, roof and floor of dwelling, availability of electricity and gas, type of cooking fuel, 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, sewing machine, iron, water filter, watch, bicycle, motorcycle, car and animal-drawn cart.

12. X also consists of distance to school from the child's house. Since the dependent variable is private school choice, a differenced form of distance is specified i.e. distance to a public school subtracted from the distance to a private school. However, travelling time to school[46] was taken as a proxy for distance in our case and relative distance was computed by comparing the information on time reported for each child to travel to his/her school and the average time taken in the cluster to travel to the alternate school type. Moreover, to capture the differential penalty of distance on school choice

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[45] The variables used are similar to that used by MICS 2007-08 on Punjab for construction of wealth index.
[46] For the sample of school going children under study, 82% of the children have been reported to walk to school.

with respect to gender of the child, the specification is augmented by the addition of a distance-gender interaction term.

13. For the purpose of capturing regional variation in school choice in rural Punjab, the location of the household is added in X depending on whether the child belongs to a household from Northern, Southern or Central Punjab (these classifications being made according to the criterion of Cheema et al. 2008). Two dummies are specified for North and South, with Center as the base category.

14. An additional dimension that is studied is parents' perceptions of the employment opportunities available to the child. It is expected that the nature and type of employment opportunity that the parents' perceive for their child will play an instrumental role in the choosing the school. Therefore, the types of employment perceived by parents for their children are aggregated to define two categories: (i) jobs which require specialized education and (ii) jobs that do not require specialized education and thus may not justify investing in high-cost private education. The former category includes jobs such as working as a teacher, doctor, engineer, or as a government sector employee[47], The second category of employment perceived by parents entails jobs such as working as a laborer, in a factory or on a farm for which they think less education is needed.. To capture the effect of parents' perceptions of prevalent employment opportunities on school choice, a binary variable is defined which equals 1 if 'low-skill' jobs are available and 0 if parents perceive 'high-skill' jobs to be available for their children. The perceived availability of employment opportunities is likely to have a differential impact on school choice across wealth quintiles. To formally test for this, the specification will also be augmented by adding an employment*wealth interaction.

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[47] In rural areas, public sector jobs are considered very prestigious so government employment may incentivize parents to undertake high expenditure on their child's schooling.

5.0 RESULTS AND DISCUSSION

5.1 ENROLLED VERSUS NON-ENROLLED[48]

1. *Household's socio-economic status appears to be an important determinant of schooling.* Table 5.1.1 shows that enrollment rates for children in the 5-18 age bracket is 29% points higher in the richest wealth quintile compared to the poorest quintile. Almost half of the children in the poorest households do not attend school. In addition to that, the percentage of children, who have never attended school, is six times as large in the lowest quintile (37.5%) compared to the highest quintile (6.3%). Regression analysis for determinants of enrollment corroborates this finding—as wealth increases, parents are 5% more likely to send their child to school. Even if the tuition fee is zero, parents incur considerable expenditure on uniform, stationery etc., and also if the child goes to school it means that he/she is unavailable for household chores (especially relevant for females). All such factors make the socio-economic status of a household a barrier to child's schooling.

Table 5.1.1: Patterns of Enrollment and Out-of-School Children [5-18] by Socio-Economic Status (%)

| Quintile | In-School* | Out of School* | | Type of School** | | | |
	Enrolled	Never Attended	Drop-outs	Private	Government	Madrassas	Others
Lowest	50.8	37.5	11.7	9.2	86.5	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	1.0
Fourth	69.2	9.9	20.9	28.6	65.2	0	6.2
Highest	79.4	6.3	14.3	44.1	53.4	1.0	1.6

*% of children, **% of enrolled children. *Source: PERI School Choice Survey, 2011*

2. *Males are more likely to attend schools compared to females.* Regression results indicate that when other household factors are controlled for, it is observed that males are 10% more likely to be sent to school than females. A possible reason, as posited by Dreze et al. (2001) is that parents are less concerned about the education of females as daughters leave their parents at the time of marriage.

3. *Pro-male gender bias is higher at lower wealth levels.* Table 5.1.2 reports gender-disaggregated numbers for each wealth quintile. Poverty seems to be an important factor explaining gender differentials in schooling: the male-female gender gap widens from a negative5%[49] in the richest 20% of the population to 11% in the bottom 20% 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.

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[48]A preliminary regression on correlates of school enrollment was performed with household size, total number of children [5-18], location, child labor, child gender, household wealth and parental education as explanatory variables. For the regression results of this section, refer to Table B1, Annexure B.

[49] Negative implies that at the uppermost tail of the wealth distribution female enrollment is greater than male enrollment. However, for all other wealth quintiles male enrollment is higher.

Table 5.1.2: Patterns of Enrollment and Out-of-School Children [5-18] By Gender & Socio-Economic Status (%)

Quintile	In-School* Enrolled	Out of School* Never Attended	Out of School* Drop-outs	Type of School** Private	Type of School** Government	Type of School** Madrassas	Type of School** Others
Lowest: 1							
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
Second							
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
Third							
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
Fourth							
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
Highest: 5							
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

*% of children, **% of enrolled children *Source: PERI School Choice Survey, 2011*

4. *Intergenerational effects exist in education.* Parental education increases the likelihood of their child's education. The impact on enrollment decision is twice as high for mother's literacy (4%) relative to father's literacy (2%).Because educated parents are more likely to be aware of the benefits of education, parental education comes out to be a stronger predictor for school attendance. A possible reason for the higher effect of maternal education on enrollment is that maternal education is strongly related to school participation of females (Dreze et al. 2001).

Table 5.1.3: Regional Patterns of Enrollment and Out-of-School Children [5-18] (%)

District	*Tehsil*	In School* Enrolled	Out of School* Never Attended	Out of School* Drop-outs	Type of School** Private	Type of School** Government	Type of School** Madrassas	Type of School** Others
				(North)				
Chakwal	Talagang	86.5	4.7	8.9	30.7	68.1	0	1.2
				(Center)				
Jhang	Jhang	67.4	16.8	15.8	26.5	67.5	0.4	5.6
Nankana Sb.	Sangla Hill	69.4	15.3	15.3	26.0	74.0	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
				(South)				
Khanewal	M. Channu	61.7	17.3	21.0	15.8	84.2	0	0
Bahawalpur	B.Sadar	46.9	35.4	17.7	17.0	74.0	0	9
Bahawalpur	K.Tamewali	36.2	53.6	10.1	14.3	82.1	0	3.6

*% of children, **% of enrolled children, *Source: PERI School Choice Survey, 2011*

5. *There is considerable regional variation in enrollment in Punjab: enrollment is higher in Northern Punjab while lower in Southern Punjab relative to the Center.* Educational indicators are the most encouraging in the North as demonstrated by Table 5.1.3; enrollment rate in Talagang, Chakwal is the

highest, 86.5%, 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. On the other hand, the average enrollment rate in the surveyed *tehsils* of the Center is 71.6%. The situation in the South is very different. Compared to the North and the Center, the region lags behind in socio-economic indicators. The average enrollment rate for the three surveyed *tehsils* from the Southern region is only 48.3%. This implies that in the South, every second child is out of school. Thus, along a spectrum ranging from lowest to highest, North ranks at the highest, South at the lowest while Center falls midway between the two extremes in terms of performance in the education sector. It is also found in our multivariate regression framework that parents in the North are 18% more likely to send their child to school relative to Central Punjab; while in South Punjab, parents are 12% less likely to enroll their child in school relative to the Centre. This could possibly be linked to the socio-economic conditions of these regions, since Northern Punjab is primarily a non-agricultural area where people rely on wage employment as an income source as opposed to rural areas in Center and South where farm income is 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 socio-economic indicators relative to the other regions.

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

5.2 PRIVATE VERSUS PUBLIC SCHOOLING

5.2.1 WEALTH

1. *Private schools are accessible to poor parents*. Enrollment rates by wealth quintiles show that 9% of all school-going children in the bottom 20% of the population are enrolled in private schools (Table5.1.1).This, in part reflects the rise of low-fee private schools.

2. *Wealthier parents are more likely to send their children to private schools relative to poor parents*. The share of private school going children increases with socio-economic status – the share in the top 20% being 4 times as large as that in the bottom quintile (Table5.1.1). Regression results substantiate this finding. With each successive quintile, the probability of enrolling in a private relative to public school increases by 6 % (Table. B2, Annexure B).

3. *Parents from all socio-economic groups favor females in the private versus public schooling decision.* While parents discriminate against females in the enrollment decision, they are more likely to choose private schooling for their daughters than 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 (Table5.1.2).[50] This observation also holds true for all levels of schooling. The differential between male and female private enrollment rates is especially large for middle and high levels. In each case, female private enrollment is almost twice as large as male enrollment in private schools (Table A5, Annexure A). This differential persists even in our regression results when other factors are controlled for. It could possibly be pointing towards limited public schooling options for girls since the Punjab Programme Monitoring and Implementation Unit (PMIU) 2009 census of public schools in Punjab shows that the numbers of public schools for boys are more than the number of schools of girls in the *tehsils* that were surveyed under PERI. Thus private schools could be filling an important void in the

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[50] A comparison of these findings with those from other datasets such as PSLM suggests that the patterns which are emerging in the surveyed tehsils are in line with provincial and national trends.

market for education. To fully establish this argument, a more detailed profiling of government schools by gender and schooling levels in the surveyed areas is needed

4. *Girls from richer households are more likely to go to private school 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 a7% higher chance of being enrolled in a private school relative to their counterparts in the bottom 20% of the wealth distribution. Wealthier households would tend to have a greater pool of resources, thus making it easier for parents to bear the expenses associated with private education.

5. *The wealth effect on the choice of private schooling is stronger for high school children compared to primary children across all socio-economic groups.* Results show that the wealth effect is three times greater for high school children (20%) compared to primary school going children (6%). This is not surprising given private high school education is more expensive than primary or middle school education. For the sample under consideration, the average monthly tuition fee reported is more than double for private high school children (Rs. 518) compared to private primary school children (Rs. 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 much greater relative to the primary level.

5.2.2 EMPLOYMENT OPPORTUNITIES[51]

1. *Parents are more likely to choose private schools if they think employment opportunities, which require a high level of education, are available for their children.* Such jobs entail working overseas, as a government employee, as a school teacher or as a professional i.e. a doctor, engineer or banker. All these jobs require a minimum level of education and have strict eligibility criteria. Availability of lucrative employment opportunities would motivate parents to undertake greater investments in their children (the choice of private over public schooling is in some ways a reflection of that willingness) since availability of such jobs would promise higher future returns on their children's education.

2. *Parents are less likely to choose private schools for their children if prevalent job opportunities do not require specialized education.* This would entail jobs that parents who perceive that jobs available for their children jobs require a comparatively low level of education like running the family business, working on the farm, in a factory, or as a laborer have a 12% less likelihood of choosing a private school. Investment in a child's education seems to be linked to weighing the costs of education with expected returns from that education. If expected future returns are low (as is the case in most of the jobs in this category), parents will be less willing to bear the cost of private education. Secondly, if parents do not think that the quality of education acquired in school will improve the likelihood of availing the prevalent job opportunities, investment in private education may not be considered worthwhile.

3. *Richer parents are more likely to send their children to private schools even when prevalent 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 reverses for households at the upper tail of the wealth distribution. Despite 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

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[51] For this section, job opportunity reflects parents' perceptions and not actual availability of jobs.

employment opportunities on school choice varies by the household's socio-economic status (Refer to Table B3, Annexure B).

4. *Parents perceive different jobs for their sons and daughters.* Figure 5.2.1 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% of the female children are perceived to gain employment as a teacher as opposed to only 5% of the male sample. On the contrary, the percentage of male children perceived to work in the government sector is about two times higher than for females.

Figure 5.2.1: Parents Perception of Employment Opportunities by Gender (Percentage of children)
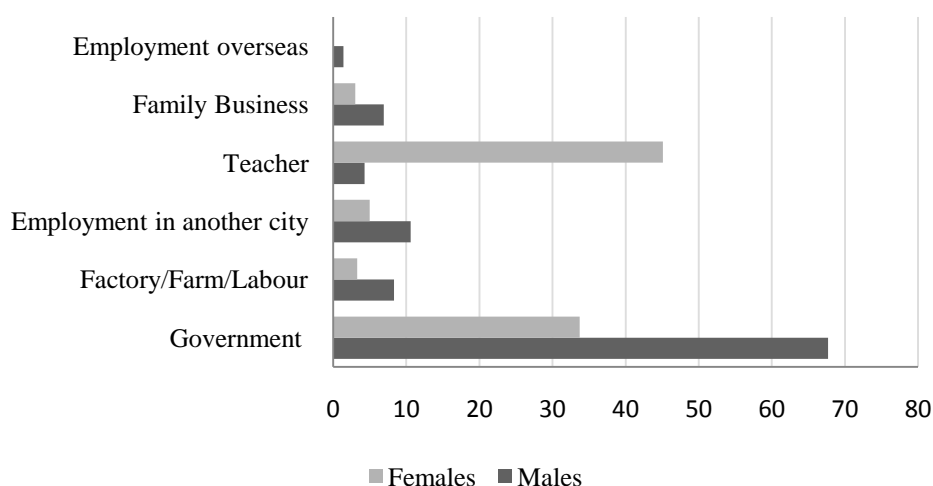
5.2.3 ACCESS

1. *Parents exhibit greater preference for private education as the accessibility of private relative to public schools increases in a cluster.* The shorter the time taken to travel to a private school relative to a public school within a cluster, higher the probability of enrolling in a private school (7%), (Table B2, Annexure B).For the sample of school going children under study, 82% of the children have been reported to walk to school. In a rural context where going to school by foot is the predominant means of traveling, distance emerges as a significant determinant of school choice.

2. *Parents are very sensitive to proximity of private relative to public schools in choosing a school for their daughters.* Gender disaggregated results show that as the relative distance between private and public school increases in a cluster, parents are 7.5% less likely to choose a private school for their daughters (Table B2, Annexure B). Regressions by levels of schooling illustrate 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% for primary school going females, while 8% for middle school girls) (Table B2, Annexure B). Figure 5.2.2 shows modes of transportation used by children for going to school. Given more than 90% of the primary and secondary school going females walk to school; it is not surprising that parents consider distance as an important determinant of school choice for their daughters.

Figure 5.2.2*: Modes of Transportation by Gender [Percentage of children]*
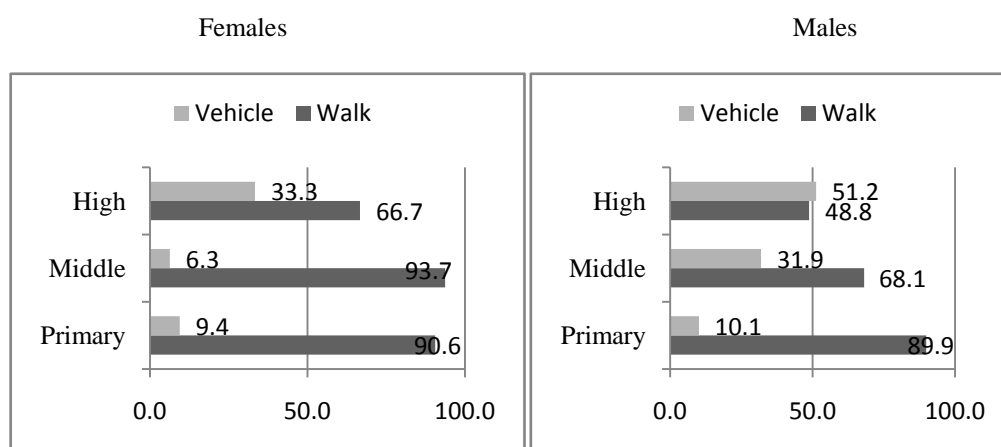
Females   Males

3. *Parent's 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 as well as from the gender disaggregated regressions at the primary and middle tiers of schooling. Almost 57% of the males at the primary level are reported to be accompanied by parents, another sibling, a friend or a relative on their way to school. Thus even though more than 90% of the male children walk to school, but as long as they are accompanied by another person, parents may not regard distance as an important constraint while choosing a school for their male children.

4. *Distance does not influence school choice for males or females at the high school level.* The finding holds for both males and females. A much larger percentage of children at this level use some sort of a vehicle. Half of all males and one third of all females use 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 transportation to be safer than walking to school, and thus don't consider distance as a significant determinant of school choice for children at this level. Needless to say, older children are less vulnerable relative to younger children and thus parents may be more comfortable in sending their older children to far away schools.

5.2.4 PERCEIVED QUALITY OF SCHOOLS[52]

Figure 5.2.3: Parents' Ratings of English, Science and Mathematics teaching

Quality of English teaching

Quality of Science teaching

Quality of Math teaching
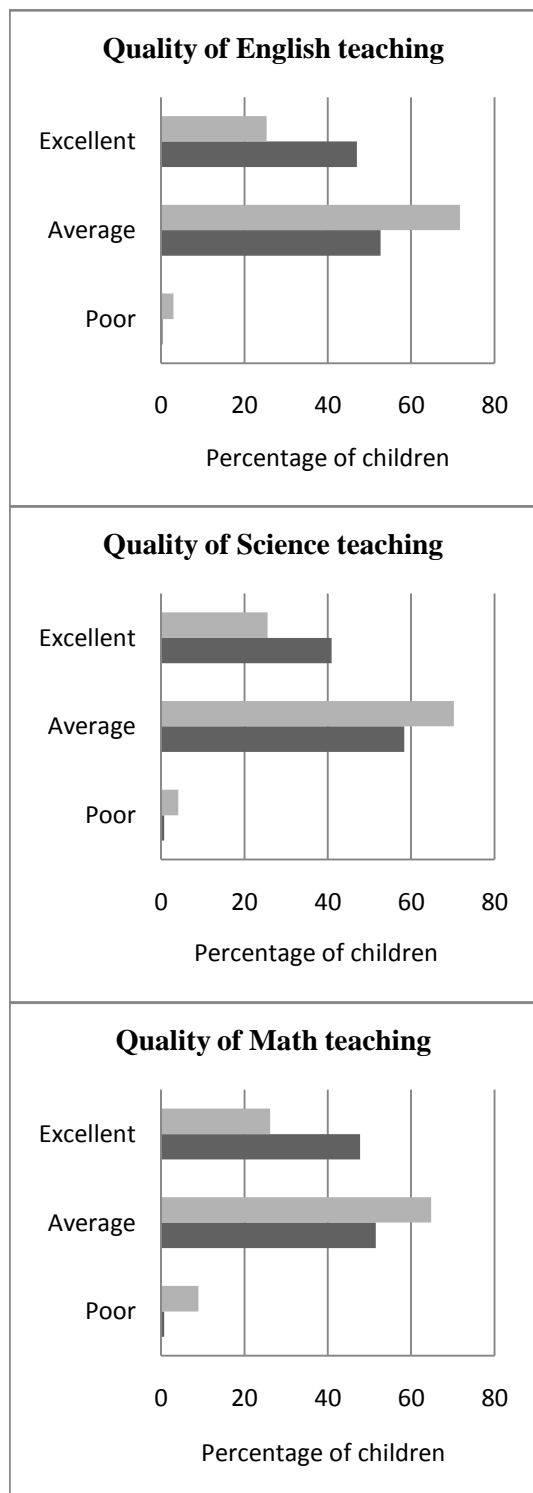
Public ▨   Private ▨

1. *The quality of English, Science and Mathematics teaching is generally better at private schools than public schools.* Parents' ratings regarding the quality of teaching of the three subjects at their child's school are shown in Figure 5.2.3 on the left. The quality gap of teaching between private and public schools is evident as a greater percentage of parents' of public school going children report the teaching as 'average' (or 'poor') compared to private school children. Conversely, the percentage of children for which parents report the teaching at school as 'excellent' is higher for private schools. For the 'excellent' measure, this private-public gap is around 22% for both English and Mathematics teaching and 15% for Science teaching.

2. *Quality of subjects taught is instrumental in explaining school choice at the middle and high level, but not at the primary level.* It is seen that subjects' teaching quality index is insignificant at primary level but significant in explaining school choice at higher levels. In particular, the impact of better teaching quality at private schools relative to public schools on private school enrollment is almost twice as strong for high school children (8%) relative to middle school children (4%) (Table B2, Annexure B). A possible reason could be that at higher levels compared to primary level, parents by virtue of undertaking comparatively greater expenditure are more concerned about the knowledge acquired by children at school.

3. *Quality of subjects' teaching matters for males but not females.* For the male sample, parents with better perceptions of the quality of teaching at private schools (relative to public schools) are 5% more likely to send their sons to private schools (Table B2, Annexure B). However, for females this effect is insignificant. This may be because parents perceive that benefits from educating their children are likely to differ by gender. For example, better academic quality may be deemed important for sons in enhancing their future income earning potential while for daughters other considerations like improved marriage prospects may be considered more important.

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[52] It is important to stress that the findings of this section are based on parents' perceptions of school quality rather than actual measures of quality.

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

4.Parents attach varying importance to English, Mathematics and Science teaching at different tiers of schooling. Splitting the subjects' quality index into its components for the three levels of schooling adds further insight to the results. It is found that for primary level children English, Mathematics and Science teaching quality are all individually insignificant in determining school choice. It may be that parents of these children are not driven by the quality of teaching in choosing the type of school rather they regard other dimensions of school quality such as teachers' presence to be more relevant, because at the primary level, the need for a more disciplined environment may be an important factor. At the middle tier of schooling, it surfaces that parents ascribe different values to the three main subjects with only English and Mathematics significantly determining school choice. Better perception of English and Mathematics teaching at a private school relative to a public school increases the likelihood of enrollment in a private school by 6% for both subjects (Table B4.1, B4.2, B4.3, Annexure B).

5. 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 parents' perceptions of English, Mathematics and Science quality at private school compared to public school is associated with a probability of 17 %, 10% and 15% respectively of choosing a private school (Table B4.1, B4.2, B4.3, Annexure B).This demand for better teaching may be arising more in the 10th and final year of high school since students are expected to take an important Matriculation (or "Matric") exam administered by the provincial education department, to gain a certificate of completion of high school. 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 arguably may be the reason that parents' perceptions on quality of all subjects emerge as significant in our regression framework in explaining school choice at the high level.

6. The emergence of English as a determinant of school choice is a consequence of high value attached to knowledge of English language by parents for children's future employment. Parents of school-going children were asked why English was an important reason for choosing private school. The responses revealed that 77% of the parents thought that understanding English opens up better job opportunities for their children, while 15% considered it as a means of attaining high status in society.

Figure 5.2.4 : English Important because:

High status in society
15%

Facilitates higher
education
8%

Better Job
opportunities
77%
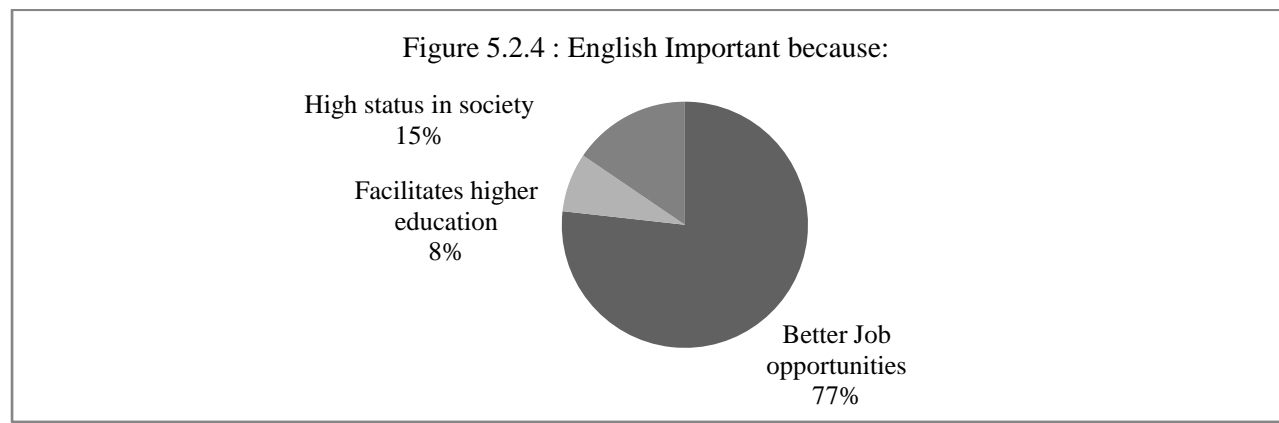
Figure 5.2.5: Teacher Absenteeism in Private/Public Schools

Teachers' Absence (in a week)
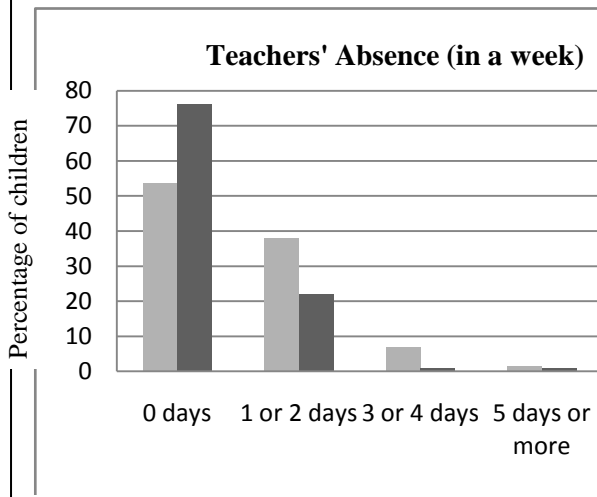
Figure 5.2.6: Teaching Skills in Private/Public Schools

Teaching Skills
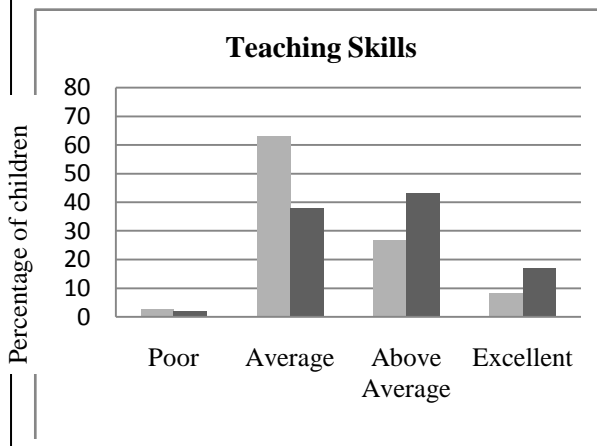
Public   Private

7. Teacher absenteeism is lower in private schools. Figure 5.2.5 clearly shows that teachers' absence as perceived by parents is higher in public schools. For 9% of government school children, parents think that teachers are absent more than 2 days in a week while this number is only 2% for private-school children. The private-public gap in absenteeism rates is 23% for 0 days absence. LEAPS (2007) argues 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 responsibilities on public school teachers pertaining to non-teaching work.

8. Parents perceive that teaching skills are better at private schools. The ratings for the teachers by the parents demonstrate that parents think that private school teachers are better and point towards the existence of a private-public gap in teaching skills (Figure 5.2.6). For 17% (43%) of private-school children, parents rate the teaching skills as 'excellent' ('above average') but this percentage is only 8% (27%) for public-school children. Conversely for a greater proportion of public school going children, the teaching skills of the teachers fall in the lower end of the rating scale. The evidence on primary school children in LEAPS (2007) report confirms this finding: while only 45% of the parents rated the teaching skills of government school teachers as above average or excellent, this number was 60% for private school teachers.

9. Teacher quality (measured by a composite index of perceived teaching skills and teacher presence) matters for females but not for males. The quality of teacher (as measured by an aggregated index on teacher's presence, qualifications and skills) surfaces as an essential factor in explaining school choice for females; however it is insignificant for males. The likelihood of choosing a private school for females improves by 4% as the perceived difference in teacher quality in private school relative to public school increases. (Table B2, Annexure B). Comparing this result to our previous findings on subjects' teaching quality shows that while subject quality matters for males, teacher quality is important for females. It may be because parents regard the presence of teachers more important for females due to safety concerns, but for males better academic quality plays a vital role in improving job opportunities.

10. While both teachers' presence and the skills and competencies of teachers are instrumental at high school level, teachers' presence is only important 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. Regression analysis shows that as teacher absenteeism in private relative to public school decreases, parents are 9% more likely to choose private schools for their children at the primary tier of schooling. (Table B5.1, B5.2, Annexure B). However, it is found that parents care for the quality of teaching skills as well as teacher absenteeism while choosing a high school for their children. If parents think that teachers are better at private schools, they are 18% more probable to choose a private school. Similarly, regularity of teachers at a private high school is likely to increase enrollment by 30%. 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 for the "Matric" exam so better and regular teachers at a school count in as a key factor in the school choice. Therefore, both teachers' presence and the quality of the teachers' skills stand out important at the high level.

11. The private-public gap in measures of school infrastructure is low. Data reveals that for more than 90% of both private and public school children, parents feel that the basic infrastructure (measured by the presence of boundary wall, latrine, water supply and electricity supply) is available at schools. However, parents perceive slightly better infrastructure quality at private schools in all measured aspects but this gap is not very large and ranges from 3-8%.

Figure 5.2.7: Provision of Water/ Electricity/ Latrine/ Boundary Wall at a Child's School as Perceived by Parents (Percentage of Children)
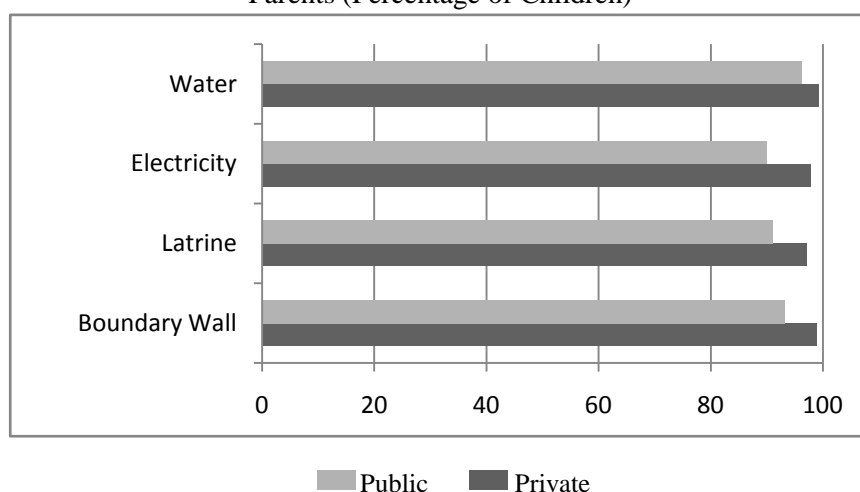
12. School infrastructure is an important determinant of school choice for high-school children. Parents who perceive the quality of infrastructure of private schools is better than public schools are 14% more likely to choose a private school for their child (Table B2, Annexure B). In each individual cluster, as 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 primary or middle schools. For parents choosing between private and public high schools, infrastructure performs the role of a signaling device of the school's quality as the aspects of infrastructure are highly visible and can be easily compared. 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 keep track of the teachers' regularity. This may be the main reason why the school infrastructure index emerges as a significant determinant of school choice at the high level, and not at the other levels of schooling.

5.2.5 OTHER OBSERVATIONS

1. Safety and security of female children plays a decisive role in school choice for primary-school children. It surfaces that the impact of parents' perceptions about boundary wall on school choice at the primary level depends on the sex of the child. In particular, females are 27% more likely to be enrolled in a private school with a boundary wall relative to males at the primary tier of schooling (Table B6, Annexure B). This shows that safety and security of girls is a key factor when parents choose a school for their young daughters. These results are supported by literature that has shown that existence of a boundary wall is instrumental in parents' decision to send their children (especially girls) to school (Anderson, 1988; World Bank, 1996; ASER, 2010).

2. Parents discriminate amongst their children on the basis of child's skills. A look at parents' responses regarding their child abilities (in Figure 5.2.8) reveals a tendency to send more intelligent and hardworking children to private schools than public schools. The percentage of children reported to be 'above average' hardworking (intelligent) is 16% (13%) higher for private school children compared to public school children. 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% more likely to choose a private school if they perceive their child to be generally intelligent and hardworking. (Table B2, Annexure B). This shows that intra-household allocation of educational expenditure is biased towards those children whom the parents perceive as hardworking and intelligent. Also, by levels of schooling, perceptions about child competence are only significant 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 5.2.8: Parents' ratings of their child's competence
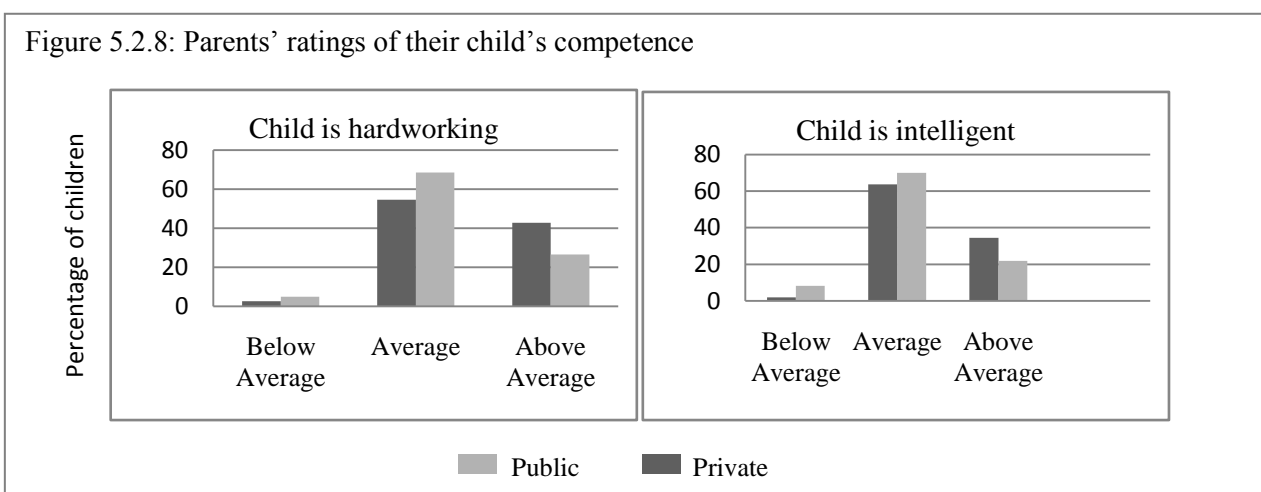
3. *Private enrollment is highest in the Center relative to North and South Punjab.* An examination of regional patterns in Table 5.1.3 illustrates that while the private sector has a substantial outreach in the surveyed *tehsils* of the North and the Center; it has a much more limited scope in the southern *tehsils* of the province. In the Northern *tehsil*, for instance, private enrollment for children between 5-18 years of age stands at 30.7% while in the surveyed *tehsils* of the Center the average private school enrollment is 31.8%. Thus, in each of these regions, the private sector is, on average, catering to one third of all enrolled children in the 5-18 age brackets. In the surveyed *tehsils* of the South, however, the private sector is much more limited in scope with the average private school enrollment standing at 15.7% only. To further investigate this finding, we employed Punjab Examination Commission 2010 database which provides test scores data for all public schools in Punjab for grade 5 and 8. Tabulating average test scores by *tehsils* for Maths, Science and English shows that average test scores for all these subjects are higher in the Northern *tehsils* relative to the *tehsils* in the Central Punjab. This may result in lower demand for private schooling relative to the Center. However, lower private enrollment in South relative to North and Center may be linked to the degree of rurality.

5.2.6 SCHOOLING COSTS

1. *Expenditure incurred on private education is higher relative to public education.* The schooling costs were calculated from the expenditure data by adding the reported primary expenditure on schooling mainly consisting of admission/registration/examination fees (monthly) plus school tuition fees (monthly)

and the miscellaneous schooling cost: comprising monthly cost of uniform/shoes/books, private tuition center fees and cost of transport. We looked at total schooling expenditure across wealth quintiles. 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 much more on their child's schooling compared to parents of a public school going child (Columns 1 & 2 in Table 5.2.1). 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 incurred on private education relative to public education

Table 5.2.1: Quintile and gender wise Total Expenditure per capita for Public and Private schools (Rs. per Month)

	(1)	(2)	(3)	(4)	(5)	(6)
Quintile	Private	Public	Private boys	Private girls	Public boys	Public girls
1	245	75.6	330	124	71	86
2	289	82.5	284	296	86	79
3	520	105	761	381	99	116
4	399	234	434	370	238	230
5	592	206	756	432	205	208

Source: PERI School Choice Survey, 2011

2. *School choice for females is elastic to the expenditure incurred on private education relative to public education.* Regression results show that the cost involved in 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 enrollment of females in private school by 13% (Table B7, Annexure B). However for males, it is insignificant in explaining school choice. This reveals that costs incurred on schooling are a key factor while deciding the type of school for girls, but for males it does not seem to matter.

Box 5.1: Measuring Relative Expenditure:

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

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3. *The impact of relative expenditure on school choice differs by the level of schooling, being smallest at the primary and largest at the high tier of schooling.* The effect of expenditure on school choice is twice as large at the high level (18%) relative to the primary level of schooling (9%). 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 the higher levels.

6.0 SUMMARY OF FINDINGS AND CONCLUSIONS

1. The objective of the study is to explore why Pakistani parents in rural Punjab choose the option of sending their children to low- fee private schools when free public schools are available. Data was collected on parents' perceptions of school and teacher quality, child's ability, the expected benefits of education, and how these factors may be related to school choice.

2. The study sample was chosen to be representative of rural Punjab in areas where both public and private schools were available. A survey of 1024 households was conducted in 64 clusters spanning 8 *tehsils* in 7 districts taking into account variations across the province.

3. In the surveyed sample, 33% of children in the 5-18 age bracket were currently not in school. Almost half of the children from the poorest households were not in school. The majority of enrolled children attended government schools, 27% of children attended private schools, 0.3% were in Madrassas and 3.4% were in NGO, foundation assisted or other types of schools.

Table 6.0.1: Impact[a] of School Choice Determinants on the Probability of a Child going to Private School

	Overall	Primary	Middle	High
Socio-Economic Status	Increases	Increases	No change	Increases
Distance to Private School	Decreases	Decreases	Decreases	No change
• Distance for Females [b]	Decreases	Decreases	Decreases	No change
Gender(Females)[c]	Increases	Increases	Increases	Increases
Location [d]				
• Northern Punjab	Decreases	No change	No change	Decreases
• Southern Punjab	No change	No change	No change	No change
Child Competence	Increases	No change	No change	Increases
Teacher Quality	Increases			
• Teaching Skills		No change	No change	Increases
• Teacher Presence		Increases	No change	Increases
Quality of Academic Teaching	Increases			
• English Teaching		No change	Increases	Increases
• Mathematics Teaching		No change	Increases	Increases
• Science Teaching		No change	No change	Increases
Infrastructure Quality	No change			
• Boundary Walls		Increases[f]	Increases	Increases
Employment Opportunities [e]	Increases	--	--	--
Expenditure on Private schooling	Decreases for females but no change for males			

[a] No change means that the effect is statistically insignificant at ten percent level.

[b] The effect of distance to school is relative to males.

[c] Effect is relative to males.

[d] The effect of location on school choice is relative to Central Punjab.

[e] Employment that requires a high level of specialized education relative to employment that does not require such level of education.

[f] This effect is significant after controlling for the gender aspect of primary school children

4. Female private enrollment is higher than male private enrollment by 7% although overall enrollment rates for girls were only 62% compared to 71% for boys. However parents spent more on boys' private school expenditure compared to spending on girls' private schooling.

5. Private enrollments vary by region; accounting for about 30% of enrollments in the Northern and Central surveyed *tehsil*s and 16% of enrollments in the Southern *tehsils.*

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

7. Distance is an important factor in choosing private school for girls and at the primary level. However at the high school level, distance did not matter in school choice for male or female students, indicating that safety issues and means of transport may be less of an issue for older children.

8. Even though girls' overall school enrollment is lower compared to boys, parents choose the private rather than public option more for girls than for boys. The distance factor being important for girls could be one reason.

9. While the wealthiest families are 4 times more likely to send their children to private schools, even among the poorest 20% of households 9% of children are enrolled in private schools.

10. Higher private school costs are more of a deterrent to female than male private school enrollment. A unit increase in expenditure on private schooling relative to public schooling decreased the probability of enrolling a female in private school by 13%, but it was insignificant in explaining school choice for male children. Therefore while private schools are considered a popular alternative for girls, the more expensive the private school, the greater the chance of a boy rather than a girl attending it.

11. Perceived employment opportunities are an important determinant of investing in private school for poorer parents. Private education is chosen if parents think that available jobs require certain minimum educational qualifications such as government jobs, overseas jobs and teaching (however, if parents perceive that the only job opportunities available are those requiring less specialized education, such as running the family business, farming or factory work, then there is a 12% less likelihood of choosing private education). However, when family resources are less constrained, parents do not make this distinction, since richer parents are more likely to choose private education even when perceived employment opportunities do not require a minimum level of education.

12. Parents' perception about the standard of Mathematics, English and Science teaching is not a significant determinant of school choice at the primary level. At the middle school level, the quality of Mathematics and English, but not Science, becomes important in choosing private school. At the high school level, perceived teaching quality of all three subjects becomes important in choosing private over public school.

13. At the middle and high school levels, if parents think teachers are better in private schools, they are 18% more likely to choose a private school for their children.

14. Teacher presence rather than teacher skills is more important in choosing a private school at the primary level, and for girls

15. The percentage of children parents ranked to be 'above average' in terms of hard work and intelligence is higher by 16% and 13% for private school going children compared to public school children. Multivariate regression analysis substantiates that children in the same household may

receive different treatment in terms of schooling depending on their perceived abilities, especially at the high school level.

16. From the summary of findings above, safety concerns for daughters seem to be an important reason for choosing private schools for girls. Parents expressed characteristics of private schools such as shorter walk from home, presence of teacher and presence of boundary walls to be prominent factors in sending girls to private schools. It was seen that the better the academic standards and quality of teacher instruction in all subjects at the high school level, the more parents are willing to spend on private schools. For poorer families, additional expenditure required for higher standard private education, especially at the high school level was more likely to be incurred for sons rather than daughters and for children with greater academic ability. Another important motivation for choosing private schools is linked to employment opportunities in the area. Government and other professions such as teaching (especially for females) were perceived to require a certain level of education and investing in private education would give children a better chance of obtaining these jobs.

17. In conclusion, the demand for private schools exists for different reasons at different levels of schooling for girls and boys. At the primary level, parents are willing to pay for low cost private schools that are close to the home and where a teacher is present, especially for girls. Parents will also invest more money in private school education offering higher academic standards and English medium instruction, particularly for children who demonstrate academic ability, if this private school education meets the requirements for potential jobs available in the area.

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ANNEXURE A: SUPPLEMENTARY TABLES AND FIGURES

TABLE A1: GENDER DISAGGREGATED GROSS ENROLLMENT RATES: PRIMARY, SECONDARY, TERTIARY: 2009 (%)

	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 Development Indicators, 2010.

TABLE A2: INTER-PROVINCIAL PATTERNS OF ENROLLMENT AND OUT-OF-SCHOOL CHILDREN [5-18]: RURAL (%)

	Enrolled	Out-of-School	Private	Public	Madrassas	Others
Pakistan	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
Punjab	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
Sind	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
KP	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
Baluchistan	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: PSLM 2008-09

TABLE A3: PATTERNS OF ENROLLMENT AND OUT-OF-SCHOOL CHILDREN [5-18] BY REGION: RURAL PUNJAB (%)

	Enrolled	Out-of-School	Private	Government	Madrassas	Others
North	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
Center	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
South	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
West	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: Multiple Indicator Cluster Survey, 2008-09

TABLE A4: PATTERNS OF ENROLLMENT AND OUT-OF-SCHOOL CHILDREN [5-18]: RURAL PAKISTAN (%)

	Enrolled	Never Attended	Private	Public	Madrassas	Others
Lowest	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
Quintile2	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
Quintile3	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
Quintile4	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
Highest	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: PSLM 2008-09

TABLE A5: VARIABLES USED IN CONSTRUCTION OF PERCEPTIONS AND AWARENESS

Parents awareness about Private Education	
pr2	ever visited a private school
pr3	know of anyone who studies/studied in a private school?
pr4	aware of a private school in your village
pr5	aware of a private school in another village or region
Parents awareness about Government Education	
pr6	ever visited a govt school
pr7	know of anyone who studies/studied in a govt school?
pr8	aware of a govt school in your village
pr9	aware of a govt school in another village or region
Parents' Perceptions about Quality of Child	
pc1	how intelligent is child in studies and otherwise
pc2	how hardworking is child in studies and other work
Parents' Perceptions about School Quality	
pd1b	quality of mathematics teaching
pd1c	quality of English teaching
pd1d	quality of science teaching
Parents' Perceptions about Teacher Quality	
pe3	child's class teacher's educational qualification
pe5	how many days was class teacher absent in the past week?
pe6	how good is class teacher in his/her teaching skills
Parents' Perceptions about School's Physical Infrastructure	
pf1	condition of child's school building
pf3	Availability of a functional latrine
pf6	school have electricity?
pf7	Does school have water?
pf8	Does school have boundary walls?
Parents' Perceptions about Child's Safety	
pf9	school has a gate keeper
pf10	frequency of corporeal punishment
pf11	likelihood of harassment by fellow students

TABLE B1: DETERMINANTS OF ENROLLMENT

HH Size	0.00234
	(0.00523)
Total children [5-18]	0.00456
	(0.0101)
Wealth Index	0.0521***
	(0.0193)
Child labour	-0.0489*
	(0.0262)
Mother's education	0.0355***
	(0.00746)
Father's education	0.0185***
	(0.00369)
Gender	0.0965***
	(0.0283)
North Punjab	0.181***
	(0.0342)
South Punjab	-0.119***
	(0.0354)
N	1108

Marginal Effects Reported, Standard errors in parentheses,

*, **, *** denote 10, 5 and 1% of significance

TABLE B2: DETERMINANTS OF SCHOOL CHOICE – OVERALL, BY GENDER AND BY LEVELS

	(1)	(2)	(3)	(4)	(5)	(6)
	Overall	Males	Females	Primary	Middle	High
Total Children [5-18]	-0.034**	-0.038**	-0.033	-0.048**	-0.047	0.048
	(0.014)	(0.019)	(0.022)	(0.019)	(0.031)	(0.060)
HH Size	-0.001	-0.012	0.005	-0.009	0.013	0.003
	(0.007)	(0.010)	(0.011)	(0.010)	(0.014)	(0.028)
Socio-Economic Status	0.057***	0.039*	0.073***	0.057***	0.003	0.199***
	(0.016)	(0.020)	(0.026)	(0.021)	(0.032)	(0.075)
Mother's Education	0.003	0.012	-0.010	0.005	0.005	-0.029
	(0.007)	(0.009)	(0.010)	(0.009)	(0.014)	(0.029)
Father's Education	0.007	0.002	0.018**	0.012*	0.009	0.008
	(0.005)	(0.006)	(0.008)	(0.007)	(0.009)	(0.021)
Gender	-0.570***			-0.585***	-0.640**	-0.922***
	(0.131)			(0.193)	(0.254)	(0.137)
Relative Distance	-0.065***	0.030	-0.074***	-0.128***	-0.081*	-0.018
	(0.022)	(0.019)	(0.026)	(0.037)	(0.045)	(0.072)
Gender*Access	0.101***			0.119***	0.104*	0.156
	(0.029)			(0.045)	(0.061)	(0.099)
Child Competence	0.029***	0.009	0.063***	0.011	0.014	0.102***
	(0.009)	(0.011)	(0.016)	(0.012)	(0.019)	(0.037)
Subject Quality	0.022**	0.046***	-0.016	0.006	0.038**	0.083**
	(0.010)	(0.013)	(0.016)	(0.013)	(0.019)	(0.042)
Teacher Quality	0.031**	0.024	0.035*	0.022	0.031	0.084
	(0.014)	(0.017)	(0.023)	(0.019)	(0.028)	(0.055)
Infrastructure Quality	0.012	0.007	0.013	-0.005	-0.003	0.142**
	(0.014)	(0.017)	(0.026)	(0.018)	(0.039)	(0.066)
Child Safety	0.009	0.011	0.007	0.021*	-0.009	0.001
	(0.009)	(0.012)	(0.016)	(0.012)	(0.017)	(0.039)
Private Education Awareness	0.038***	0.027***	0.058***	0.047***	0.021*	0.069**
	(0.006)	(0.007)	(0.010)	(0.008)	(0.012)	(0.030)
North Punjab	-0.127***	-0.106*	-0.158**	-0.089	-0.038	-0.360**
	(0.044)	(0.056)	(0.069)	(0.065)	(0.085)	(0.151)
South Punjab	-0.060	-0.111*	0.002	-0.027	-0.081	
	(0.055)	(0.064)	(0.096)	(0.071)	(0.105)	
N	613	337	276	363	145	90

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

TABLE B3: PARENTS' PERCEPTION OF EMPLOYMENT OPPORTUNITIES & SCHOOL CHOICE

	Overall		Males		Females	
	(1)	(2)	(3)	(4)	(5)	(6)
Total Children [5-18]	-0.033**	-0.032**	-0.033*	-0.033*	-0.030	-0.026
	(0.016)	(0.016)	(0.020)	(0.020)	(0.028)	(0.029)
HH Size	-0.016*	-0.015*	-0.017	-0.014	-0.015	-0.014
	(0.009)	(0.009)	(0.012)	(0.011)	(0.014)	(0.014)
Socio-Economic Status	0.066***	0.042**	0.054**	0.022	0.091***	0.083**
	(0.019)	(0.020)	(0.022)	(0.024)	(0.035)	(0.035)
Mother's Education	-0.005	-0.006	0.003	0.002	-0.018	-0.018
	(0.008)	(0.008)	(0.010)	(0.010)	(0.012)	(0.012)
Father's Education	0.009*	0.010*	0.003	0.004	0.021**	0.022**
	(0.005)	(0.005)	(0.007)	(0.007)	(0.010)	(0.010)
Gender	-0.651***	-0.633***				
	(0.140)	(0.144)				
Relative Distance	-0.054**	-0.048**	0.046**	0.046**	-0.069**	-0.066**
	(0.024)	(0.023)	(0.021)	(0.021)	(0.030)	(0.030)
Gender*Access	0.111***	0.105***				
	(0.032)	(0.032)				
Child Competence	0.030***	0.029***	0.016	0.016	0.067***	0.066***
	(0.010)	(0.010)	(0.012)	(0.012)	(0.021)	(0.020)
Subject Quality	0.031***	0.027**	0.041***	0.034**	0.009	0.008
	(0.011)	(0.011)	(0.014)	(0.013)	(0.020)	(0.021)
Teacher Quality	0.035**	0.035**	0.032*	0.029	0.040	0.041
	(0.016)	(0.016)	(0.018)	(0.018)	(0.032)	(0.032)
Infrastructure Quality	0.022	0.025*	0.009	0.012	0.048	0.050
	(0.015)	(0.015)	(0.017)	(0.017)	(0.031)	(0.031)
Child Safety	0.023**	0.021**	0.019	0.019	0.029	0.027
	(0.010)	(0.010)	(0.012)	(0.012)	(0.020)	(0.020)
Private Education Awareness	0.040***	0.039***	0.028***	0.027***	0.065***	0.063***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.014)	(0.014)
Availability of Jobs	-0.124**	-0.399***	-0.098*	-0.401***	-0.201**	-0.387***
	(0.051)	(0.058)	(0.058)	(0.082)	(0.098)	(0.099)
SES*Availability of Jobs		0.161***		0.152***		0.138
		(0.053)		(0.053)		(0.147)
North Punjab	-0.130***	-0.128***	-0.120**	-0.124**	-0.173**	-0.164*
	(0.048)	(0.047)	(0.058)	(0.054)	(0.083)	(0.084)
South Punjab	-0.019	-0.010	-0.069	-0.053	0.027	0.027
	(0.070)	(0.071)	(0.079)	(0.083)	(0.126)	(0.127)
N	490	490	292	292	198	198

*Marginal Effects Reported, Standard errors in parenthesis, *, **, *** denote 10, 5 and 1% of significance*

TABLE B4.1: UNBUNDLING SUBJECT QUALITY: MATHEMATICS

	(1)	(2)	(3)
	Primary	Middle	High
Total Children [5-18]	-0.038**	-0.045	0.047
	(0.017)	(0.028)	(0.039)
HH Size	-0.015*	0.007	-0.025
	(0.009)	(0.014)	(0.020)
Socio-Economic Status	0.120***	0.046	0.192***
	(0.031)	(0.042)	(0.072)
Mother's Education	0.012	-0.006	-0.018
	(0.008)	(0.014)	(0.020)
Father's Education	0.010*	0.009	0.008
	(0.006)	(0.008)	(0.015)
Gender	-0.515***	-0.842***	-0.228
	(0.188)	(0.139)	(0.447)
Relative Distance	-0.104***	-0.096**	0.124*
	(0.033)	(0.043)	(0.071)
Gender*Access	0.104***	0.162***	-0.027
	(0.040)	(0.057)	(0.084)
North Punjab	-0.038	-0.037	-0.243**
	(0.067)	(0.085)	(0.111)
South Punjab	-0.047	-0.022	-0.325***
	(0.060)	(0.099)	(0.102)
Quality of Maths Teaching	-0.028	0.061*	0.100*
	(0.027)	(0.040)	(0.064)
N	412	163	111

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

TABLE B4.2: UNBUNDLING SUBJECT QUALITY: SCIENCE

	(1)	(2)	(3)
	Primary	Middle	High
Total Children [5-18]	-0.036**	-0.046*	0.028
	(0.017)	(0.028)	(0.041)
HH Size	-0.016*	0.006	-0.020
	(0.009)	(0.014)	(0.020)
Socio-Economic Status	0.117***	0.045	0.191***
	(0.031)	(0.043)	(0.071)
Mother's Education	0.013	-0.007	-0.012
	(0.008)	(0.014)	(0.020)
Father's Education	0.010*	0.010	0.006
	(0.006)	(0.009)	(0.015)
Gender	-0.505***	-0.833***	-0.178
	(0.191)	(0.145)	(0.468)
Relative Distance	-0.104***	-0.093**	0.133*
	(0.033)	(0.044)	(0.075)
Gender*Access	0.101**	0.159***	-0.041
	(0.040)	(0.058)	(0.088)
North Punjab	-0.034	-0.042	-0.224*
	(0.067)	(0.085)	(0.114)
South Punjab	-0.049	-0.026	-0.307***
	(0.060)	(0.100)	(0.111)
Quality of Science Teaching	-0.028	0.051	0.154**
	(0.028)	(0.044)	(0.068)
N	411	162	111

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

TABLE B4.3: UNBUNDLING SUBJECT QUALITY: ENGLISH

	(1)	(2)	(3)
	Primary	Middle	High
Total Children [5-18]	-0.037**	-0.044	0.056
	(0.017)	(0.028)	(0.040)
HH Size	-0.015*	0.007	-0.030
	(0.009)	(0.014)	(0.020)
Socio-Economic Status	0.119***	0.045	0.209***
	(0.031)	(0.042)	(0.073)
Mother's Education	0.013	-0.006	-0.019
	(0.008)	(0.014)	(0.020)
Father's Education	0.010*	0.010	0.010
	(0.006)	(0.008)	(0.015)
Gender	-0.500***	-0.817***	-0.248
	(0.190)	(0.155)	(0.462)
Relative Distance	-0.103***	-0.091**	0.116
	(0.033)	(0.043)	(0.074)
Gender*Access	0.101**	0.151***	-0.035
	(0.040)	(0.057)	(0.088)
North Punjab	-0.042	-0.031	-0.222*
	(0.066)	(0.086)	(0.116)
South Punjab	-0.053	-0.034	-0.297***
	(0.059)	(0.097)	(0.110)
Quality of English Teaching	-0.035	0.063*	0.167***
	(0.025)	(0.036)	(0.062)
N	412	163	111

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

TABLE B5.1: UNBUNDLING TEACHER QUALITY: IMPORTANCE OF TEACHING SKILLS

	(1)	(2)	(3)
	Primary	Middle	High
Total Children [5-18]	-0.044**	-0.052*	0.058
	(0.018)	(0.030)	(0.042)
HH Size	-0.014	0.007	-0.027
	(0.009)	(0.015)	(0.021)
Socio-Economic Status	0.120***	0.033	0.173**
	(0.032)	(0.045)	(0.076)
Mother's Education	0.010	-0.005	-0.021
	(0.008)	(0.014)	(0.021)
Father's Education	0.011*	0.010	0.013
	(0.006)	(0.009)	(0.016)
Gender	-0.496**	-0.824***	-0.363
	(0.195)	(0.151)	(0.461)
Relative Distance	-0.099***	-0.114**	0.134*
	(0.034)	(0.044)	(0.076)
Gender*Access	0.103**	0.161***	-0.009
	(0.042)	(0.062)	(0.090)
North Punjab	-0.011	-0.033	-0.197
	(0.074)	(0.090)	(0.135)
South Punjab	-0.040	-0.024	-0.346***
	(0.063)	(0.109)	(0.108)
Teaching Skills	0.004	-0.036	0.181*
	(0.030)	(0.056)	(0.095)
N	392	155	106

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

TABLE B5.2: UNBUNDLING TEACHER QUALITY: IMPORTANCE OF TEACHER PRESENCE

	(1)	(2)	(3)
	Primary	Middle	High
Total Children [5-18]	-0.052***	-0.040	0.074*
	(0.019)	(0.030)	(0.044)
HH Size	-0.013	0.007	-0.043*
	(0.010)	(0.015)	(0.025)
Socio-Economic Status	0.125***	0.046	0.240***
	(0.035)	(0.046)	(0.085)
Mother's Education	0.012	-0.013	-0.055**
	(0.009)	(0.015)	(0.024)
Father's Education	0.010	0.016*	0.035**
	(0.006)	(0.009)	(0.018)
Gender	-0.534***	-0.807***	-0.555
	(0.190)	(0.163)	(0.428)
Relative Distance	-0.111***	-0.111**	0.093
	(0.035)	(0.044)	(0.081)
Gender*Access	0.115***	0.152**	0.030
	(0.043)	(0.063)	(0.097)
North Punjab	-0.024	-0.044	-0.252**
	(0.074)	(0.089)	(0.124)
South Punjab	0.018	-0.065	-0.363***
	(0.075)	(0.102)	(0.111)
Teacher Presence	0.091**	-0.011	-0.309*
	(0.039)	(0.078)	(0.176)
N	369	145	94

Marginal Effects Reported, Standard errors in parentheses,, **, *** denote 10, 5 and 1% of significance*

TABLE B6: UNBUNDLING INFRASTRUCTURE QUALITY: PRESENCE OF A BOUNDARY WALL[53]

	Primary	Middle	High
	(1)	(2)	(3)
Total Children [5-18]	-0.036**	-0.048*	0.064
	(0.017)	(0.028)	(0.040)
HH Size	-0.014	0.003	-0.022
	(0.009)	(0.014)	(0.020)
Socio-Economic Status	0.118***	0.044	0.209***
	(0.031)	(0.041)	(0.070)
Mother's Education	0.014*	-0.004	-0.019
	(0.008)	(0.013)	(0.018)
Father's Education	0.009	0.006	0.013
	(0.006)	(0.008)	(0.014)
Gender	-0.488**	-0.847***	-0.323
	(0.190)	(0.133)	(0.425)
Relative Distance	-0.093***	-0.095**	0.121*
	(0.032)	(0.042)	(0.064)
Gender*Access	0.097**	0.164***	-0.004
	(0.039)	(0.055)	(0.080)
North Punjab	-0.067	-0.032	-0.195*
	(0.061)	(0.084)	(0.113)
South Punjab	-0.047	-0.020	-0.211
	(0.059)	(0.098)	(0.132)
Boundary Wall	-0.011	0.150*	0.516***
	(0.038)	(0.081)	(0.147)
Gender*Boundary Wall			
N	421	166	116

Marginal Effects Reported, Standard errors in parentheses,, **, *** denote 10, 5 and 1% of significance*

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[53] Regressions with presence of a toilet facility did not yield any significant results. Thus, those results have not been reported.

TABLE B7: RELATIVE SCHOOLING EXPENDITURE AND SCHOOL CHOICE

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

*Marginal Effects Reported, Standard errors in parentheses, *, **, *** denote 10, 5 and 1% of significance*

ANNEXURE C: SAMPLING METHODOLOGY

The PERI education survey sample is a sub-sample of the latest round of Multiple Indicator Cluster Survey (MICS). MICS was conducted by the Government of the Punjab in collaboration with UNICEF and technical assistance from the Federal Bureau of Statistics (FBS). First round of MICS conducted was during fiscal year 2003-04 whereas the latest round was completed in 2007-08. MICS 2003-04 Punjab was the first ever survey conducted by the Government of Punjab that was representative at the district level, while MICS 2007-08 is not only representative at the District level but also at *Tehsil* (sub-district) level.

The sample size for MICS 2007-08 was selected by the FBS. For urban areas, the FBS has developed an updated sampling frame by doing a quick count in all the urban areas of Punjab. The quick count is a technique that allows updating a sampling frame by counting all the households and housing units within an Enumeration Area or Enumeration Block (EB), as termed in Pakistan. The FBS has divided every city/ town into a number of small compact areas of average size 200–250 households with well-defined boundaries.

There are maps available for each of these enumeration blocks. In addition, the FBS has carried out a socioeconomic stratification of each urban block into low, medium and high-income areas. The stratification of the enumeration blocks was done using quality of housing and living standards of the households that make up the block. The frame was last updated in 2003–04 in preparation for the 2005 Economic Census. In addition, each EB has been classified as residential, commercial and industrial according to the predominance of the activity inside the EB. At the present time there are 14,654 EBs in Punjab Province.

The sampling frame for the rural areas was developed by the FBS and consists of the list of villages/ mouzas/ dehs that was prepared during the 1998 CPH. At the time of MICS 2007-08, there were approximately 25,869 villages in the frame.

The sample is selected in two stages. In the urban areas, the first-stage selection unit is the Enumeration Block. In the rural areas, the first-stage selection unit is the village. From each first-stage sampling unit, a sample of households is selected: 16 in the rural areas and 12 in the urban areas. The first-stage units are selected with probability proportional to size. The second-stage units are selected with equal probability. This gives a sample that is more or less self-weighting within each selection stratum. However, the self-weighting characteristic of the sample is lost after the field work due to adjustments such as non-response, changes in the occupancy status of the households, refusals, etc.

For the rural domain, each administrative district is treated as an independent and explicit stratum. The sample selection is conducted separately within each rural part of the corresponding *Tehsil*. The selection of the MICS sample is a two stage process. At the first stage, a village is selected. The process of selection at the first stage is probability proportional to size. Then a sample of 16 households using systematic random sampling approach is selected.

Since the PERI education project has a scope of just rural Punjab, the urban households available in the MICS 2007-08were ignored. The definition of rural areas was based on the 1998 Census of Population and Housing (CPH) and subsequent changes made by the provincial government (if any). Areas involving military establishments and homeless population were excluded from the sample due to the scope of the survey.

The sampling methodology of the PERI education survey was defined considering the particular survey objectives. The survey focused on rural Punjab was designed to account for the cross regional variations. For convenience, Punjab was geographically divided between Central, Western, Southern and Central Punjab. Western Punjab was largely affected by 2010 floods so the non-existence of normal conditions was a point of concern. We used the definition discussed by Cheema et al. (2008) to do this segmentation. Table C1 and C2, Annexure C provides the classification of different *Tehsils* in their respective sub-regions.

Ignoring only the urban part of MICS 2007-08 samplewas not sufficient provided that some of the rural *Tehsils* have a peri-urban nature due to recent and rapid urbanization. As private school enrollment is more biased towards the urban and semi-urban (peri-urban) areas, we decided to exclude such *Tehsils* from the target population. Using the average proportion of rural population and its standard deviation, *Tehsil*s lying 2 standard deviations below the average rural population proportion were excluded. A threshold of less than

32.52% of rural population was considered as peri-urban *Tehsil*s and therefore excluded from the target population.

Southern Punjab is historically a deprived region in terms of socioeconomic conditions and access to public services. Our survey objectives required comparing children going to public schools to children going to private schools so a possible problem with Southern Punjab was that any *Tehsil* selected from South could appear to be very low in terms of availability of private schools and private school enrollment. Therefore, southern Punjab was divided into two regions based on private school enrollment rate. A threshold of twenty percent private school enrollment was used for this classification. So the two sub-regions of "Southern Punjab with >=20% enrollment" and "Southern Punjab with <20% enrollment" were used instead of total Southern Punjab. Table C2, Annexure C provides the list of *Tehsil*s classified under these two classifications.

Having defined our Target population in four rural regions of Central, Northern, Southern with <20% Enrollment and Southern with >=20% Enrollment, the next step was to select a representative sample using appropriate sampling technique. Our sampling approach was multi-stage sampling with stratified sampling approach with allocation of sample size proportional to the size of the stratum at the first stage. The second stage was simple random sampling approach with probability proportional to size.

Target Population

- Our target population consisted of all households of rural Punjab excluding Western Punjab[54], which was largely affected by the recent flood. Moreover, some *Tehsil*s that had relatively very small rural area (i.e. rural population of less than 32.52%) were dropped from the target population keeping in view the peri-urban nature of these rural clusters.

Target Sample

- The sampling frame was same to MICS 2007-08 as our target households were a sub-sample of the MICS 2007-08 surveyed households. Considering the cost estimates, a total of 1024 households (approx. 64 clusters) were surveyed from all the sub-regions of rural Punjab. Number of *Tehsil*s was randomly selected from the 4 different strata using the proportionate sampling approach. The details of the 4 strata have been provided below.

Regions	% of MICs 2007-08 Sample	n=1024 Sample	No. of Clusters	No. of *Tehsil*s	*Tehsil* Selection	Cluster Selection within *Tehsil*
Central	55.01	564	35	4	Random	Proportional to Size
Northern	13.35	137	9	1	Random	Proportional to Size
Southern Punjab with <20% pvt. Enrollment	26.13	268	17	2	Random	Proportional to Size
Southern Punjab with >=20% pvt. Enrollment	5.50	57	4	1	Random	Proportional to Size

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[54] We use the regional classification of Cheema et al. (2008).

Total	100	1025	64	8		

Sample Selection Technique

- Sample was selected using multi-stage sampling technique. We distributed our sample size of 1024 households into four strata using proportionate allocation and then determined the required number of clusters to be completed from each strata and the number of target *Tehsil*s. The table below illustrates the sample allocation within strata.

District	*Tehsil*
Central Punjab	
Hafizabad	Hafizabad
Faisalabad	Jinnah Town
Nankana Sahib	Sangla Hill
Jhang	Jhang
Northern Punjab	
Chakwal	Talagang
Southern Punjab (<20% pvt. Enrollment)	
Bahawalpur	Bahawalpur Sadar
Khanewal	MianChannu
Southern Punjab (>=20% pvt. Enrollment)	
Bahawalpur	KhairpurTamewali

- At first stage, all the *Tehsil*s of Punjab were classified into four strata namely Central Punjab, Northern Punjab, Southern Punjab (with <20% PPE[55]) and Southern Punjab (with >=20% PPE).
- Then, a simple random sample of required number of *Tehsil*s was taken from each of the four strata using population proportional allocation.
- At the third stage, we randomly selected the required no. of clusters from the *tehsil*s again employing proportional allocation.
- Lastly, all households of the selected clusters surveyed during MICS 2007-08 round were visited.

The details of selected *Tehsil*s and their respective number of clusters surveyed during the MICS 2007-08 round have been provided below. The number of clusters sampled for current study and the proportion of sample has also been included here.

Sr. No	District	*Tehsil*/ Town	No. of Rural Clusters in MICS 2007-08	No. Selected Clusters	% Sample
1	Hafizabad	Hafizabad	26	8	30.8
2	Faisalabad	Jinnah Town	15	5	33.3
3	Nankana Sahib	Sangla Hill	21	7	33.3
4	Jhang	Jhang	47	15	31.9
5	Chakwal	Talagang	24	9	37.5
6	Bahawalpur	Bahawalpur Sadar	42	7	16.7
7	Khanewal	MianChannu	49	9	18.4
8	Bahawalpur	KhairpurTamewali	21	4	19.0
			245	64	

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[55] Private Primary School Enrollment

TABLE C1: CLASSIFICATION OF *TEHSIL*S IN PUNJAB BY SUB-REGIONS

Classification of Tehsils in Punjab Sub-Regions

Sr#	Central Punjab Tehsil (District)	Northern Punjab Tehsil (District)	Southern Punjab Tehsil (District)	Western Punjab Tehsil (District)
1	Chak Jhumra Town (Faisalabad)	Attock (Attock)	Bahawalnagar (Bahawalnagar)	Bhakkar (Bhakkar)
2	Iqbal Town (Faisalabad)	Fateh Jang (Attock)	Chishtian (Bahawalnagar)	Darya Khan (Bhakkar)
3	Jaranwala Town (Faisalabad)	Hasanabdal (Attock)	Fort Abbas (Bahawalnagar)	Kallur Kot (Bhakkar)
4	Jinnah Town (Faisalabad)	Hazro (Attock)	Haroonabad (Bahawalnagar)	Mankera (Bhakkar)
5	Layallpur Town (Faisalabad)	Jand (Attock)	Minchinabad (Bahawalnagar)	DG Khan (DG Khan)
6	Madina Town (Faisalabad)	Pindigheb (Attock)	Ahmedpur East (Bahawalpur)	Taunsa (DG Khan)
7	Sumundri Town (Faisalabad)	Chakwal (Chakwal)	Bahawalpur City (Bahawalpur)	Khushab (Khushab)
8	Tandlianwala Town (Faisalabad)	Choa Saidan Shah (Chakwal)	Bahawalpur Sadar (Bahawalpur)	Noorpur Thal (Khushab)
9	Aroop Town (Gujranwala)	Talagang (Chakwal)	Hasilpur (Bahawalpur)	Choubara (Layyah)
10	Kamoke Town (Gujranwala)	Dina (Jhelum)	Khairpur Tamewali (Bahawalpur)	Karor Lal Esan (Layyah)
11	Khiali Shahpur Town (Gujranwala)	Jhelum (Jhelum)	Yazman (Bahawalpur)	Layyah (Layyah)
12	Nandipur Town (Gujranwala)	Pind Dadan Khan (Jhelum)	Jahanian (Khanewal)	Essa Khel (Mianwali)
13	Nowshera Virkan Town (Gujranwala)	Sohawa (Jhelum)	Kabirwala (Khanewal)	Mianwali (Mianwali)
14	Qila Didar Singh Town (Gujranwala)	Gujjar Khan Town (Rawalpindi)	Khanewal (Khanewal)	Piplan (Mianwali)
15	Wazirabad Town (Gujranwala)	Kahuta Town (Rawalpindi)	Mian Channu (Khanewal)	Ali Pur (Muzaffargarh)
16	Gujrat (Gujrat)	Kallar Sayaddan Town (Rawalpindi)	Dunya Pur (Lodhran)	Jatoi (Muzaffargarh)
17	Kharian (Gujrat)	Kotli Sattian Town (Rawalpindi)	Kehror Pacca (Lodhran)	Kot Addu (Muzaffargarh)
18	Sara-e-Alamgir (Gujrat)	Murree Town (Rawalpindi)	Lodhran (Lodhran)	Muzaffargarh (Muzaffargarh)
19	Hafizabad (Hafizabad)	Potohar Town (Rawalpindi)	Boson Town (Multan)	Jampur (Rajanpur)
20	Pindi Bhattian (Hafizabad)	Taxila Town (Rawalpindi)	Jalalpur Pirwala Town (Multan)	Rajanpur (Rajanpur)
21	Ahmadpur Sial (Jhang)		Mumtazabad Town (Multan)	Rojhan (Rajanpur)
22	Chinniot (Jhang)		Shah Ruk-e-Alam Town (Multan)	
23	Jhang (Jhang)		Sher Shah Town (Multan)	
24	Shorkot (Jhang)		Shujabad Town (Multan)	
25	Chunian (Kasur)		Khanpur (RY Khan)	
26	Kasur (Kasur)		Liaqatpur (RY Khan)	
27	Pattoki (Kasur)		RY Khan (RY Khan)	
28	Allama Iqbal Town (Lahore)		Sadiqabad (RY Khan)	
29	Aziz Bhatti Town (Lahore)		Burewala (Vehari)	
30	Nishtar Town (Lahore)		Mailsi (Vehari)	
31	Wahga Town (Lahore)		Vehari (Vehari)	
32	Malakwal (Mandi Bahauddin)			
33	Mandi Bahauddin (Mandi Bahauddin)			
34	Phalia (Mandi Bahauddin)			
35	Nankana Sahib (Nankana Sahib)			
36	Safdarabad (Nankana Sahib)			
37	Shah Kot (Nankana Sahib)			
38	Shangla Hill (Nankana Sahib)			
39	Narowal (Narowal)			
40	Shakargarh (Narowal)			
41	Depalpur (Okara)			
42	Okara (Okara)			
43	Renala Khurd (Okara)			
44	Arifwala (Pakpattan)			
45	Pakpattan (Pakpattan)			
46	Chichawatni (Sahiwal)			
47	Sahiwal (Sahiwal)			
48	Bhalwal (Sargodha)			
49	Kot Momin (Sargodha)			
50	Sahiwal (Sargodha)			
51	Sargodha (Sargodha)			
52	Shahpur (Sargodha)			
53	Sillanwali (Sargodha)			
54	Ferozewala (Sheikhupura)			
55	Muridke (Sheikhupura)			
56	Sharaqpur Sharif (Sheikhupura)			
57	Sheikhupura (Sheikhupura)			
58	Daska (Sialkot)			
59	Sambrial (Sialkot)			
60	Sialkot (Sialkot)			
61	Gojra (TT Singh)			
62	Kamalia (TT Singh)			
63	TT Singh (TT Singh)			

TABLE C2: TARGET POPULATION OF *TEHSIL*S CLASSIFIED BY SUB-REGIONS

Target Population of Tehsils Classified in Sub-Regions

Sr#	Central Punjab Tehsil (District)	Northern Punjab Tehsil (District)	Southern Punjab >=20% Enrollment Tehsil (District)	Southern Punjab < 20% Enrollment Tehsil (District)
1	Ahmadpur Sial (Jhang)	Attock (Attock)	Ahmedpur East (Bahawalpur)	Boson Town (Multan)
2	Arifwala (Pakpattan)	Chakwal (Chakwal)	Bahawalnagar (Bahawalnagar)	Jahanian (Khanewal)
3	Bhalwal (Sargodha)	Choa Saidan Shah (Chakwal)	Bahawalpur Sadar (Bahawalpur)	Khairpur Tamewali (Bahawalpur)
4	Chak Jhumra Town (Faisalabad)	Dina (Jhelum)	Burewala (Vehari)	Khanpur (RY Khan)
5	Chichawatni (Sahiwal)	Fateh Jang (Attock)	Chishtian (Bahawalnagar)	Lodhran (Lodhran)
6	Chinniot (Jhang)	Gujjar Khan Town (Rawalpindi)	Dunya Pur (Lodhran)	Sher Shah Town (Multan)
7	Chunian (Kasur)	Hasanabdal (Attock)	Fort Abbas (Bahawalnagar)	Yazman (Bahawalpur)
8	Daska (Sialkot)	Hazro (Attock)	Haroonabad (Bahawalnagar)	
9	Depalpur (Okara)	Jand (Attock)	Hasilpur (Bahawalpur)	
10	Ferozewala (Sheikhupura)	Jhelum (Jhelum)	Jalalpur Pirwala Town (Multan)	
11	Gojra (TT Singh)	Kahuta Town (Rawalpindi)	Kabirwala (Khanewal)	
12	Gujrat (Gujrat)	Kallar Sayaddan Town (Rawalpindi)	Kehror Pacca (Lodhran)	
13	Hafizabad (Hafizabad)	Kotli Sattian Town (Rawalpindi)	Khanewal (Khanewal)	
14	Jaranwala Town (Faisalabad)	Murree Town (Rawalpindi)	Liaqatpur (RY Khan)	
15	Jhang (Jhang)	Pind Dadan Khan (Jhelum)	Mailsi (Vehari)	
16	Jinnah Town (Faisalabad)	Pindigheb (Attock)	Mian Channu (Khanewal)	
17	Kamalia (TT Singh)	Potohar Town (Rawalpindi)	Minchinabad (Bahawalnagar)	
18	Kamoke Town (Gujranwala)	Sohawa (Jhelum)	RY Khan (RY Khan)	
19	Kasur (Kasur)	Talagang (Chakwal)	Sadiqabad (RY Khan)	
20	Kharian (Gujrat)		Shujabad Town (Multan)	
21	Kot Momin (Sargodha)		Vehari (Vehari)	
22	Layallpur Town (Faisalabad)			
23	Malakwal (Mandi Bahauddin)			
24	Mandi Bahauddin (Mandi Bahauddin)			
25	Muridke (Sheikhupura)			
26	Nandipur Town (Gujranwala)			
27	Nankana Sahib (Nankana Sahib)			
28	Narowal (Narowal)			
29	Nishtar Town (Lahore)			
30	Nowshera Virkan Town (Gujranwala)			
31	Okara (Okara)			
32	Pakpattan (Pakpattan)			
33	Pattoki (Kasur)			
34	Phalia (Mandi Bahauddin)			
35	Pindi Bhattian (Hafizabad)			
36	Renala Khurd (Okara)			
37	Safdarabad (Nankana Sahib)			
38	Sahiwal (Sahiwal)			
39	Sambrial (Sialkot)			
40	Sara-e-Alamgir (Gujrat)			
41	Sargodha (Sargodha)			
42	Shah Kot (Nankana Sahib)			
43	Shahpur (Sargodha)			
44	Shakargarh (Narowal)			
45	Shangla Hill (Nankana Sahib)			
46	Sharaqpur Sharif (Sheikhupura)			
47	Sheikhupura (Sheikhupura)			
48	Shorkot (Jhang)			
49	Sialkot (Sialkot)			
50	Sillanwali (Sargodha)			
51	Sumundri Town (Faisalabad)			
52	Tandlianwala Town (Faisalabad)			
53	TT Singh (TT Singh)			
54	Wahga Town (Lahore)			
55	Wazirabad Town (Gujranwala)			