

IMPACT OF PARENTS' SUBJECTIVE
ASPIRATIONS ON SCHOOLING INVESTMENT
IN RURAL PUNJAB



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This dissertation is submitted for the degree of
M.Phil Economics
2013

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ABSTRACT

Human capital accumulation is deemed as a key indicator in the development process. It is closely related to other development indicators like socioeconomic status and occupational productivity. This study focuses on human capital investment decisions of parents for their child's schooling. By conducting a cross sectional empirical analysis, we attempt to identify parental subjective aspirations as a causal channel which impacts investment decisions regarding schooling of children. This study utilizes the 2010-11 Privatization in Education Research Initiative (PERI) dataset for children aged 5-14 who are currently enrolled in a school. The aim of this study is to; (i) assess the impact of differences in subjective aspirations between communities on schooling investment, (instrumented by the arrival of a factory) and, (ii) assess how different capabilities of siblings can influence investment decisions of parents. By exploiting exogenous variation in the arrival of new factories to a community and household fixed effects technique, parents' desire for the level of education they want for their child plays a major role in shaping up investment behaviour, but aspirations which are motivated by external factors such as arrival of new factories have a more pronounced impact on investment in schooling than differences in aspirations caused by differences between siblings. Moreover, from this study it can be deduced that this impact on investment goes into expenditure rather than towards private school enrolment.

ACKNOWLEDGEMENTS

Foremost, I am deeply grateful to Almighty God, without His blessing this thesis would not have been possible. I am deeply indebted for the undying support and encouragement of my supervisor Ms. Katherine Vyborny. I express my sincerest gratitude for her patience, guidance, motivation and knowledge without which this research would not have been possible. Her valuable feedback and belief in my capabilities made me rise to the challenge and complete this thesis, I owe her my deepest gratitude.

I am also indebted to Dr. Azam Amjad Chaudhry, Dean Faculty of Economics and Dr. Naved Hamid, Director Centre for Research in Economics and Business (CREB) Lahore School of Economics and Dr. Theresa Thompson Chaudhry, Associate Professor of Economics for their valuable comments. I would also like to acknowledge the feedback I got from the Economics Department and Centre for Research in Economics and Business (CREB) Lahore School of Economics faculty throughout my thesis. I would also like to thank Punjab Bureau of Statistics, Dr. Naved Hamid and Ms. Masooma Habib for allowing me to use PERI dataset.

Lastly, I am thankful for the immense support of my family and friends who have always been a source of encouragement and motivation throughout the process.

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ABBREVIATIONS

2SLS	Two Stage Least Squares
IV	Instrumental Variable
OLS	Ordinary Least Squares
PERI	Privatization in Education Research Initiative
HHFE	Household Fixed Effects
LPM	Linear Probability Model
ITES	Information Technology Enabled Services
IT	Information Technology
RCT	Randomized Control Trial
GPS	Global Positioning System

INTRODUCTION

Human capital accumulation is deemed as a key indicator in the development process. It is closely related to other development indicators like socioeconomic status and occupational productivity (Filmer & Pritchett, 2001; Becker, 1993). This study focuses on human capital investment decisions of parents for their child's schooling. By conducting a cross sectional empirical analysis for the year 2010-11, we attempt to identify parental subjective aspirations as a causal channel which impacts investment decisions regarding schooling of children.

As compared to other developing countries, growth of human capital in Pakistan has been slow. Gross enrolment rates in 2009 at primary, secondary and tertiary levels are 85, 33 and 6 percent respectively which are the lowest among South Asian countries with the same level of per capital income (World Bank, 2010). One of the reasons for low enrolment rates are the shrinking public expenditure on education. Expenditure on education has been declining from 2.2 percent in 2005-06 to 2 percent in 2009-10. (Pakistan Ministry of Finance, 2010).

However, another explanation for bleak educational status of the country is the pro-male bias in gross enrolment rates, which have remained persistent till 2008-09 at 64.1% for males and 42.8% for females. (Pakistan Bureau of Statistics, 2010). This pro-male bias in human capital investment is supplemented by the earnings differential across gender. The share of women in wage employment in the non-agriculture sector is a meagre 10.64% (2008-09) which advocate the existence of pro-male bias. (Minsitry of Labor and Manpower, 2010).

This highlights that pro-male bias in education is a reflection of the earning potential of males which plays a vital role in shaping investment decisions. Based on this earning potential, parents form beliefs and aspirations for their child's educational outcomes and optimize the level of investment according to these outcomes.

Recent research has substantiated this theory by showing that parental aspirations have a strong influence on investment patterns of parents (Attanasio & Kaufmann, 2010; Jensen, 2010; Heath & Mobarak, 2011; Attanasio & Kaufmann, 2009). Literature highlights that, in the light of present and newly available opportunities, parents tend to form aspirations about education of their children. This motivates parents to invest in their child's education to reap returns from employment opportunities in the future. While an extensive amount of literature on determinants of investment behaviour exists on Bangladesh, India and Mexico, there is a dearth of literature on Pakistan.

Most of the existing literature view aspirations in reduced form but this research uses direct questions about aspirations rather than focusing on reduced form analysis. The purpose of this paper is to identify the channel through which the impact of parent's subjective aspirations is translated into schooling investment decisions for their children.

The aim of this study is to; (i) assess the impact of outside factory on investment behaviour through parent's subjective aspirations and, (ii) assess how different capabilities of siblings can influence investment decisions of parents and hence intra household dynamics. For these approaches, two types of econometric specifications are followed; (i) IV Probit / TSLS (ii) Household Fixed Effects, respectively. In this paper, empirical analysis on child, household and school characteristics is carried out by using a unique dataset, Privatization in Education Research Initiative (PERI) from Rural Punjab. One of the reasons for limited research on Pakistan is lack of data on aspirations. Hence, PERI (2011) is an exception, in that it provides a better picture regarding subjective aspirations.

By exploiting exogenous variation in the arrival of new factories to a community as an instrument and household fixed effects technique, the results indicate that parents' desire for the level of education they want for their child plays a major role in shaping up investment

behaviour of households. The findings highlights that aspirations which are motivated by external factors such as arrival of new factories have a more pronounced impact on investment in schooling than dissimilarity between siblings.

Moreover, from this study it can be deduced that this impact on investment go into expenditure rather than towards private school enrolment. This can be because either children are staying in the same type of school or they may be switching between the same type of schools, i.e. private schools and other private schools or government schools and other government schools. Regardless, parents are incurring higher expenditures on their schooling or at least inputs of schooling.

This study also provides additional proof that gender bias exists in intra household allocation of resources. A positive and significant relationship was found between aspirations and total expenditure on schooling for boys i.e. parents who have higher aspirations for boys invest more per month, whereas no relationship is found for girls. However, important thing to note was that arrival of new factories still increase aspirations for girls and boys and but this increase does not translate into increase in investment for girls.

This paper follows the following structure. The next section provides a broad over view of existing literature on the aspirations and investment decisions and briefly focuses on the of existing literature. Section 3 outlines the econometric methodology along with research question and hypotheses and Section 4 provides a description of the data. Section 5, 6 and 7 outlines results and findings along with limitations and conclusion.

LITERATURE REVIEW

Immense importance has been attributed to intra-household allocation of human capital among children and this has induced households to invest a substantial amount in the provision of quality education to their children. Various interesting research has been done to identify the causal mechanisms which stimulate human capital investment. These researches can be classified can be grouped into two groups; (i) literature that consider supply side factors like availability of schools and teachers in the region, (ii) literature that examines demand side factors such as labour market opportunities which determine human capital investment, such as household and individual characteristics.

In recent literature, there has been a shift toward studies that focus on demand side factors which are considered to be a major obstacle in human capital accumulation. Researchers and econometricians have found parental aspirations to be the driver of human capital investment decisions. Since, aspirations act as an intermediary channel, it is usually considered in reduced form in various studies whereas this study aims to incorporate aspirations directly.

According to the investment motive hypothesis, resources are allocated to household members according to their expected returns in the labour market because in developing countries, people are faced with budget constraint and credit market issues which make allocation to human capital a challenge for the households (Becker G., 1993). Hence, if households choose to invest in child's education, it reflects their expectations about labour market returns in future. These expectations leads to form aspirations about what level of education parents want for their child and to further classifications according to gender in investment patterns because boys tend to have better and different labour market opportunities later in life.

Emerson & Souza (2007) estimates the impact on children due to differences in parental preference in Brazil and found that particularly fathers thought that spending on boys' education is more fruitful because as compared to girls, boys tend to stay in household, even after getting married, and are the financial support of the family. Moreover, Aslam & Kingdon (2008); Chaudhuri & Roy (2006) estimated the standard Engel curve for Pakistan which adds on the idea that differential returns in the labour market for boys are reflected in the investment decision of parents. This behaviour of parents reflects that they optimize the level of schooling and subsequently investment in schooling on the basis of expected returns for each gender.

On the other hand, parental behaviour can also be altered in the wake of an economic progress in the region which can act as an important catalyst in reaping higher returns for girls as well. Often, human capital investment decisions are a consequence of an economic shock in the region like the arrival of new factories in the locality which lead parents to anticipate better employment opportunities for their children when they grow up (Foster & Rosenzweig, 1996; Heath & Mobarak, 2011; Jensen, 2010; Munshi & Rosenzweig, 2003; Shastry, 2010; Oster & Millett, 2011).

Foster & Rosenzweig (1996) builds on this idea by assessing the impact of "exogenous technological change on returns to schooling, the effect of schooling on profitability of technical change and the effect of technical change as well as school availability on household schooling investment" during the Green Revolution in India. By making use of panel data, authors incorporate first differencing and an instrumental variable approach. They use history of shocks upto realization of initial shock and initial or lagged asset levels as instruments for endogeneity caused by the error term being correlated with change in accumulated assets which leads to schooling investment. By eliminating time invariant and

variant factors it was found that when faced with new information and technology, educated individuals had an advantage as compared to uneducated individuals since they enjoyed higher returns to schooling because educated individuals were found to adapt more easily to information technology in comparison to uneducated people. As a result this not only increased primary schooling, but expected returns increased at a higher rate in areas which were economically more advanced. Given the surge in expected returns, parents started investing more in education which resulted in greater demand for schools and hence availability of schools also increased in India during Green Revolution.

A recent study by Heath & Mobarak (2011) provides further evidence of the impact of exogenous changes in the economy by utilizing the survey, conducted by the authors. They adopted a strategy of comparing villages with and without a factory in Bangladesh before and after the arrival of economic opportunities (double difference method) and suggests that better employment opportunities were available for those who had better understanding and writing skills. Since, the garment industry required educated females, parents got their female children enrolled in schools so that the child can engage in the industry. Positive effects were observed for enrollment of younger girls. Majority studies look at aspirations in reduced form in which they are implicit whereas this study examines the explicit impact of aspirations on schooling investment.

In addition, recent shift of the Indian economy from manufacturing to service sector has not only led to economic growth but has also stimulated widespread increase in education. Oster & Millett (2011) conducted a study in which they estimated the impact of Information Technology Enabled Services (ITES) by using a school, year and state fixed effects estimator. This study provides new evidence on this recent technical change which is a shift from primary to tertiary sector in India. Nowadays, the focus has moved towards ITES and

this technological change has led to an increase in primary schooling. This finding is driven by the effect English medium schools had on returns to schooling. Information technology sector grew more rapidly in areas where English was more widely spoken, and in turn those areas experienced increased school enrolment. Similarly, Shastry (2010) instead studied the impact of globalization in the IT service sector across various Indian districts with different costs of acquiring skills. The identification strategy relies on within-state variation in relative cost of learning English. She makes use of state and year fixed effects to find that districts which were more globalized had more elastic supply of English language human capital because this type of human capital was more relevant to IT service exports.

Moreover, parents tend to anticipate that with better social networks their children have a higher chance of getting employed in a better paid job in the future. Hence, aspirations about maximizing future returns through social networks plays a vital role in explaining schooling decisions for children. Munshi & Rosenzweig (2003) explores the channel between employment opportunities and education by incorporating the dimension of traditional institutions specifically Indian Caste system in formulating career choices. They found out that parents, who were member of the male working class network, anticipated that their child will secure a same type of job as themselves and low future returns were associated with these jobs. They also found out that not only networks inculcate career choices but they also lead to specific educational choices. With the help of *jatis* fixed effects Munshi & Rosenzweig (2003) found an interesting finding that since boys had access to traditional jobs with low returns through social networks, girls started entering the labour force in non-traditional jobs. These jobs required educated girls so schooling decisions for girls were different than boys and they took full advantage of this globalization in the economy because girls had few network ties.

Furthermore, aspirations are also found to be dependent on awareness about job opportunities available in the future. To explore this idea, Jensen (2010) conducted a randomized control trial (RCT) in which the intervention aimed at providing business process outsourcing (BPO) recruiting services to teenage women were selected from randomly selected rural villages in India. Intervention design was set in a way to create awareness about new employment opportunities as well as access to those opportunities. The intervention acted as an exogenous variation which helped in excluding other explanations for the link between employment opportunities and investment in girls' education. As a result of this intervention, girls were more likely to get enrolled in school so they could exploit benefits in the future.

In recent literature subjective aspirations are used to assess human capital investment behaviour. Attanasio & Kaufmann (2009) builds on this idea by conducting a study based on aspiration and employment risk perceptions. They use *Oportunidades* (previously known as PROGRESA) dataset on Mexico along with the *Jovenes con Oportunidades* which includes the aspirations module. This conditional cash transfer program aimed at providing grants randomly to youths in the last three years of high school to explore whether parents have control over children's education or the other way round. By employing probit regressions, the role of expected monetary returns and risk perceptions of parents about employment came out to be potential determinants of schooling for junior and high school graduates. They found out schooling decisions are motivated by parent's aspirations whereas college decisions are dependent on adolescent aspirations (Attanasio & Kaufmann, 2009). They also argued that for schooling decisions, parents' expected returns and the perceived probability of employment are very important for boys whereas for girls, aspirations about employment and earnings do not appear to be a vital determinant of investment decisions (Attanasio & Kaufmann, 2010). This is so because boys are thought to be breadwinners of the household and monetary returns in future carry immense importance for boys rather than girls. On the other hand, for girls marriage

market considerations seem more important than future returns (Attanasio & Kaufmann, 2011). This explains the rationale behind gender bias in household allocation.

Moreover, Galab et al, (2013) further extends the idea of aspirations and investment in education by conducting a study based on quantitative and qualitative data collected by Young Lives for children in India. It was found that parental aspirations have a profound impact on investment outcomes for children in Andhra Pradesh, India. The findings also supported that parents aspirations for their child's future can induce parents to send their children to private school because they may perceive acquiring education as a key to success in the future.

On the other hand, Atkin's (2011) research provides contrary evidence regarding arrival of economic opportunities. By using Mexican census data collected by National Institute of Statistics, Geography, and Informatics (INEGI), it was found that due to arrival of export manufacturing jobs in municipalities results in more school drop out among children who are in secondary/high school. This is because export manufacturing firms attract low skill workers at high wages, which rather than inducing investment in schooling, results in drop outs.

Another strand of literature highlights that parents tend to expect higher future returns for children who they perceive to have unique inherent abilities and are competent. In literature it is found that parents value academic achievement as the most important facet in growth and as a result, child's performance acts as a proxy for his/her ability. Results from various studies shows that parents held higher aspirations for future earnings for children who have previously done well in school. This is because they tend to attribute this performance to child's own abilities and potential (Chi & Rao, 2003; Singh, et al., 1995). Moreover, in recent literature (Natale, Aunola, & Nurmi, 2009) also came to a conclusion that parents consider their child's abilities as the explanation for his/her academic success. Conversely, parents are found to associate failure with lack of effort put in by children.

Other research has also determined that parent's aspiration form as early as the first grade (Englund, Luckner, Whaley, & Egeland, 2004; Goldenberg, Gallimore, Reese, & Garnier, 2001) and these aspirations become increasingly linked to child's achievement as he/she passes elementary school (Goldenberg, Gallimore, Reese, & Garnier, 2001). These views of parents can bring about a change in child's performance which substantiates the idea that, positive parental attributions and beliefs, when communicated, can influence future prospects in a positive way.

These studies highlight that parent's aspirations about child's earning potential can be determined by two aspects; (i) availability of new economic opportunities, and (ii) child's ability. This is because when parents become aware of the availability of future economic opportunities or they discover potential in their child, they tend to form aspirations. Parents believe that if their child acquires good quality education, his/her chances of getting better paid employment increases. These aspirations about future motivate parents to get their children enrolled in a school that provides quality education which will help their children in securing a better job in future.

However, there are limited studies which directly estimate the impact of aspirations on investment for some countries (Mexico) but there is a scarcity of empirical studies on Pakistan that underpin the aspirations-investment in schooling mechanism. Main motivation behind this study is to address the gap between human capital investment behaviour and higher returns to education by incorporating the aspect of parental aspirations. In this study, an empirical analysis on individual and household characteristics of rural areas in Punjab will be carried out using the extensive data on subjective aspirations from Privatization in Education Research (PERI) 2011.

METHODOLOGY

3.1. Investment in Schooling and Subjective Aspirations

This study stems from the theory of rational choice which assumes that parents are rational agents who tend to maximize their utility. They rationally invest in a particular school which can help in better upbringing of their child and can help him/her to secure better employment opportunities in the future and can maximize future returns. However, in this maximization problem, parental aspirations play a significant role and bridge the gap between employment prospects and investment in schooling. Aspirations are defined as a function of expectations about potential returns and other factors, which includes the value parents place on education and social norms on educating boys and girls.

According to literature, aspirations are motivated by two ways; (i) Availability of new economic opportunities, and (ii) Child's potential and capabilities. With the existence of new or old opportunities, parents tend to form aspirations for their child's education. These aspirations are further translated into schooling investment because it is perceived by the parents that if a child is enrolled in relatively high quality school, his/her chances of getting a well paid job increases.

Moreover, aspirations are also shaped by the intellectual ability of a child. Parents are more likely to have higher educational aspirations for children who are more intelligent and gifted as compared to his/her older/younger siblings. As a result, differences in abilities are reflected in investment patterns of households. Consequently, aspirations act as an intermediary channel and in majority of the literature, the impact of aspirations are considered in a reduced form analysis i.e. impact of economic opportunities on investment in

schooling. However, this study incorporates this intermediary channel of parental aspirations to estimate the impact on investment behaviour of households.

In order to estimate the impact of parents' aspirations for children on investment in schooling, we begin with a simple model of aspirations on investment in schooling:

$$InvS_{cij} = \beta_0 + \beta_1 Parasp_{cij} + \beta_2 C_{cij} + \beta_3 H_{ij} + \beta_3 S_j + \varepsilon_{cij} \quad (1)$$

Where $InvS_c$ is the investment decisions parents make for child c 's schooling. In order to estimate the causal mechanism, the variable $InvS_c$ is expressed in two forms; (i) Private School Enrolment, and (ii) Total Expenditure incurred on child's schooling.

The firm form of $InvS_{cij}$ is categorized as whether parents choose a government or a private school for their children. Prior studies have used this distinction as a proxy for educational investment (Alderman, Orazem, & Paterno, 2001) because as compared to government schools, private schools are perceived to provide quality education. Hence, if parents invest in a private school, this shows that parents value quality education and want to ensure that their children acquire good education so that they can secure good economic prospects. This variable acts as a good proxy because it is objective and explains precisely the investment behaviour of parents. For estimation purposes this variable takes the form of a dichotomous variable taking a value of 1 if a child is currently enrolled in private school and 0 otherwise.

The second form of $InvS_{cij}$ to estimate this causal mechanism is estimated as total expenditure incurred on child's education. Total schooling costs is important in this study because it categorizes investment decisions in monetary terms. In developing countries investment decisions are subject to a budget constraint. So, investing a substantial amount of money in schooling of children reflects how parents make decisions subject to budget constraint. It can be deduced from literature that parents value a school which is of high quality. Hence, by

using a variable in monetary terms helps us in understanding the trade off between quality and cost of schooling. This variable is created as a summation of per month expenditures on tuition fees, admission fees, examination fees, expenditure on uniform, shoes, books, funds and donations, private tuition fees and transport costs. For missing observations, the expenditure was assumed to be zero for simplicity reasons.

$Parasp_{cij}$ is parental aspirations about child c 's education. This variable is quantified by utilizing the question, "Till what class do you want (Name) to study?" It ranges from 0 to 16, where 0 signifies if the parents want their child to attend school till preschool and 16 shows parent's stated desire to educate their children till masters. For estimation purposes this variable is a continuous variable of the level of educational attainment parents want for their school going children. Moreover, C_c is a vector of child characteristics where c denotes a child, H_i is a vector of household characteristics where i is a household and S_j is a vector of government school j characteristics.

There are two strategies that are followed in this research paper; (i) assess the impact of outside factory on investment behaviour through parent's subjective aspirations and, (ii) assess how different capabilities of siblings can influence investment decisions of parents and hence intra household dynamics. For these approaches, two types of econometric specifications are followed; (i) IV Probit / TSLS (ii) Household Fixed Effects, respectively. The regressions are run for seven districts of rural Punjab; Bahawalpur, Chakwal, Hafizabad, Faisalabad, Nankana Sahib, Khanewal and Jhang. Furthermore, separate regressions are run for male and female children. The results are adjusted for heteroskedasticity of unknown form by using robust standard errors at the cluster level.

3.2. Subjective Aspirations and New Economic Opportunities

The first approach attempts to address the gap between the availability of new economic opportunities and human capital investment behaviour by introducing aspirations as the intermediary channel.

3.2.1. Potentially Endogenous Variable

A potential problem with (1) is that aspirations may be endogenous. There may be reverse causality between parental aspirations and investment in schooling. Choosing a high quality school leads parents to formulate aspirations for the future as far as the earning potential of the child is concerned because they will associate academic success with success in the labour market. Thus, this channel introduces reverse causality leading to simultaneity bias. Moreover, aspirations can also be endogenous because they may be correlated with other unobserved factors that are also related to educational investments.

To correct for these problems, we use Instrumental Variable Approach. Ideally, the instrument, should contain covariates that has a strong explanatory power for the specific endogenous variable but no correlation with ε . That is $\text{Cov}(X_i, Z_i) \neq 0$ and $\text{Cov}(\varepsilon, Z_i) = 0$. This paper uses change in the number of factories located within a 5 km radius as an instrument for parents' aspirations. In order to create the instrument, we use Google Maps and factory addresses from Directories of Industries (2006-2010) dataset to get GPS co-ordinates for the factories. Since PERI survey contains information about GPS co-ordinates of households, a variable of distance between the household and all the factories was generated. The numbers of factories which fall under the 5 km radius were counted for both 2006 and 2010 to create the instrument (change in number of factories which are located within a 5 Km radius). The intuition behind constructing this instrument is that with the arrival of factories in the region, there are higher chances that better economic opportunities available.

Moreover, according to the recent International Labor Organization (ILO) standards, the minimum age of employment is 15 years which implies that firms and industries can hire someone who has at least primary education for countries like Pakistan “where the economy and educational facilities are insufficiently developed” (International Labor Organization). This further implies that children who acquire education are more likely to get employed in a factory. Hence, existence of a factory will be strongly correlated to parents’ aspirations about their child’s future. Moreover, this instrument does not impact human capital investment through any channel other than aspirations because an existence of a new factory in the region will only influence the decision to invest when parents form aspirations about education.

Furthermore, in rural Punjab, it can be observed that there is heterogeneity across districts in terms of observed factors like economic opportunities and infrastructure like road networks, health and educational facilities as well as unobserved factors like cultural background and ethical values. Excluding district dummies will induce the instrument to capture the impact of any observed and unobserved heterogeneity across district. Moreover, with the arrival of economic opportunities, prices may change, making the cost of inputs of schooling higher. This may result in a decline in the education expenditure. Therefore, with district dummies, across district observed and unobserved heterogeneity is captured. Thus, district dummies are included in all the specifications to improve the validity of the instrument because there may be districts which have better infrastructure, better schools and hence more factories.

Moreover, to further ensure the validity of the instrument, household income, mother’s income and household wealth¹ are also added as controls. If incomes of the household are not taken into account in the specifications, it will confound the relationship between parents’

¹ Wealth index is constructed by using Principal Component Analysis (PCA), a multivariate statistical technique will be used to reduce the number of variables in the data set into a smaller number of ‘dimensions’ (Filmer & Pritchett, 2001). Assets such as refrigerator, air conditioner, cooking range/microwave oven, motorcycle/scooter, sewing/knitting machine, personal computer, bicycle, car/ vehicle, electricity, gas, telephone connection, type of dwelling and number of rooms are used in the construction of the index

aspirations and investment and specifications will be subject to omitted variable bias. It may be the case that the arrival of new factories provides better economic opportunities for parents, which can lead to high income earned by the household and hence more income is available to be invested in child's education. Thus, by including household income solves the problem of omitted variable bias and ensures that the arrival of new factories impacts investment in schooling only through the channel of parents' aspirations rather than income stream of parents. Mother's income is also included to address the issue of mother's bargaining power in making investment decisions such as educating her children. Thus, the instrument is informative and valid.

3.2.2. Estimation Strategy

The variable $InvS_c$ is both dichotomous and continuous so in order to estimate the equation with these variable forms, we will use IV Probit and TSLS, respectively. After dealing with the endogeneity issues, equation (1) is estimated using number of factories located within a 5 km radius as a variable to instrument for parental aspirations separately.

First Stage:

$$Parasp_{cij} = \beta_0 + \beta_1 Factories_j + \beta_2 C_{cij} + \beta_3 H_{ij} + \beta_4 S_j + \varepsilon_{cij} \quad (2)$$

Second Stage:

$$InvS_{cij} = \beta_0 + \beta_1 \widehat{Parasp}_{cij} + \beta_2 C_{cij} + \beta_3 H_{ij} + \beta_4 S_j + \varepsilon_{cij} \quad (3)$$

Where \widehat{Parasp}_{cij} represents fitted values of parental aspirations from the first stage regression and $Factories_j$ is the change in the number of factories which are located within a 5 km radius as an instrument.

3.3. Subjective Aspirations and Child's ability

When choosing to invest for their children, parents make decisions based on the comparative analysis between their children in terms of academic excellence or hard work and determination. If one child is more determined as compared to the other child, then parents tend to choose a different school for the child who is more determined in comparison to the one child who is not as determined and vice versa. These comparisons between children impacts both parental aspirations and investment decisions because they differ from child to child. Thus, the second approach focuses on how differences in abilities of children lead to different investment decisions by incorporating the intermediary channel of parents' aspirations.

3.3.1. Specification Issues

Household specific unobserved factors like culture and family background confound that relationship between investment and parental aspirations because culture moulds parent's beliefs about education as well as future prospects for their children. For instance, if parents belong to a particular caste and culture that have strong beliefs and notions like a feudal family, they would expect their child to join the same family business rather than seek job elsewhere. On the other hand, it also influences investment decisions because family beliefs, background and cultural values are reflected in their decisions to invest. For instance, it may be the case that if the child's forefathers have attained education in a government school; it is more likely that the same or similar type of school is chosen for the child. Hence, the direction of bias on the aspirations coefficient will be positive.

To rectify this issue, we use household fixed effects. By using household fixed effects, all household unobserved factors like culture and family background are eliminated from the regression and purge the estimation from the bias. Moreover, household fixed effects model

eliminates all the characteristics that are exactly the same across siblings and it helps in analysing cross siblings dynamics of investment behaviour.

3.3.2. Estimation Strategy

Since the dependent variable $InvS_c$ is a dichotomous as well as continuous variable which so in order to estimate this model household fixed effects with linear probability model (LPM) is used for binary dependent variable and for continuous dependent variable, household fixed effects with ordinary least squares is used. Linear Probability Model estimates a linear least square regression where dependent variable takes on a value of 1 or 0. Like Ordinary Least Square (OLS), it minimizes the sum of square residuals but it has two problems. In the case of binary dependent variable, OLS imposes heteroskedasticity and LPM estimates go beyond the interval limit of 1 and 0. However, these problems can be dealt with. We can use heteroskedasticity robust standard errors at cluster level. (Greene, 2003). This produces consistent and unbiased estimates which are quite similar to marginal effects of the Probit regression.

We shall use household fixed effects to purge our result off biases

$$InvS_{cij} = \beta_0 + \beta_1 Paras_{cij} + \beta_2 C_{cij} + \beta_3 S_j + \alpha_i + \varepsilon_{cij} \quad (4)$$

α_i includes the household factors that do not vary across children in the household i .

Household invariant factors includes wealth, total income, parent's education, place of residence and unobserved factors like culture. Household fixed effects model ensures that all the household invariant characteristics are eliminated in order to provide comparison among siblings based on variant factors only.

3.4. Individual and Household Characteristics²

C_c includes child characteristics; age, gender and birth order of the child. Since, the sample is restricted to children who fall between 5-14 years age bracket so the variable age will consider age of children in this bracket. Age of the child is an important determinant when it comes to investing in education because parents make the decision to invest based on the age of the child. When children are in primary school going age, parents are likely to be more particular about which school the child goes and the quality of education being offered in that school but when children grow up and enter the middle or high school age, parents may become more indifferent in making investment decisions because other factors like the decision to earn or study comes into play. In order to capture this U- shaped impact, age and the square of age is used.

Gender of the child also plays a vital role in schooling decisions. When making schooling decisions parents tend to become selective on the basis of gender and in some situations this selective decision making can bridge the gap between male and females by increasing educational and employment opportunities for females. Hence, gender variable reflects the extent of bias in educational investment decisions. This variable takes the form of a dummy variable taking a value of 1 if male and 0 otherwise. This is because in rural Punjab, parents are more likely to prefer boys over girls. It is expected that the gender variable will have a positive sign because boys are considered to be the providers of the family and are more likely to stay with the parents.

Moreover, a large body of literature suggests that parents favour either firstborns or lastborns (Behrman & Taubman ,1986; Kantarevic & Mechoulan, 2006; Powell & Steelman, 1995). It can be seen that children who are higher up the birth order are more likely to be preferred

² Description of all the variables along with units and variable forms are given in the Appendix

over younger siblings because by educating older children, returns to education will be materialized early as compared to younger children. Moreover, if older children are enrolled in good quality school, it saves the expense of educating younger children because the older ones can help tutoring their younger siblings. Furthermore, if parents seek security in old age, they may prefer earlier born children.

However, it can also be the other way round. Parents may choose to invest in younger siblings and may keep the older siblings out of school so they can stay at home and take care of younger siblings. Since, parents can choose high quality schools for either younger or older siblings; from literature it can be observed that birth order follows a negative as well as a positive relationship. Moreover, evidence about birth order effects is also mixed. Behrman & Taubman (1986) and Kantarevic & Mechoulan (2006) found out that first born child is more likely to be the recipient of parent's time and resources as compared to later born. Whereas Powell & Steelman (1995) concludes that later born children are more likely to be recipients of financial assistance from parents. According to theory and empirical evidence, number of older siblings of child c in household i is included as a control. This allows us to test the possible mechanisms through which birth order can effect parent's decision to choose a school and will also capture information about biases parents may have regarding schooling.

Moreover, Ability of the child is an important in determining investment in schooling determinant because parents make the decision to invest based on their perception of their child's ability. If the child is more intelligent or hardworking, parents are likely to be more particular about which school the child goes and the quality of education being offered in that school, which can fully utilize their child's potential. Hence, when making investment decisions parents' perception of their child's ability plays a vital role. This variable is a continuous variable and uses the question asked by parents, "How intelligent is the child in

general?” where the variable takes on a value of 1 if the child is below average, 2 if the child is average and 3 if the child is above average. However, it may be possible that ability impacts investment in schooling through parental aspirations, causing endogeneity. In order to establish that there is no co-linearity between aspirations and ability, variance inflation factor (VIF) was calculated. It was found that aspirations and ability are not collinear because the VIF was 1.01 whereas Tolerance was 0.9918. As a rule of thumb, the VIF should be less than 10 and Tolerance should be more than 0.1 to indicate that there is no multicollinearity³.

On the other hand, H_i includes wealth of the household, household income, mother’s income and parent’s education. In developing countries, budget constraints faced by the households shapes human capital investment decisions. Hence, resources of the household and the amount earned by household plays a crucial role. Household wealth is used as a proxy for resources of the household. For the estimation of household wealth, a wealth index will be calculated for each household. The assets used in the calculation⁴ are refrigerator, air conditioner, cooking range/microwave oven, motorcycle/scooter, sewing/knitting machine, personal computer, bicycle, car/ vehicle, electricity, gas, telephone connection, type of dwelling and number of rooms. Principal Component Analysis (PCA), a multivariate statistical technique will be used to reduce the number of variables in the data set into a smaller number of ‘dimensions’ (Filmer & Pritchett, 2001). In mathematical terms, from an initial set of n correlated variables, PCA creates uncorrelated indices or components, where each component is a linear weighted combination of the initial variables. Moreover, total income of the household is calculated as the summation of basic income and additional income of the household per year. Furthermore, according to literature it can be observed that bargaining power of the women plays an important role in investment decisions’ regarding child’s education, thus mother’s income is also added as a control.

³ Variance Inflation Factor calculations are given in the Appendix

⁴ Wealth Index was created by using the same assets that were used in MICS 2007-08 to create the index

Education of the parents is a vital component in human capital investment decisions since educated parents can make better and informed decisions about their child's schooling. They will be more inclined to get their children enrolled in schools that are going to steer their children in the right direction and facilitate them in getting good employment opportunities. This variable takes the form of a continuous variable which lies between 0-16 where 0 years of education refers to preschool and 16 years of education implies masters' education. Both father's and mother's education will be included in the specifications.

3.5. School Characteristics

In addition to the above factors, investment decisions are usually driven by actual quality of the school. When making schooling decisions, parents are more likely to prefer schools which offer relatively high quality education in actual. Thus, quality of the school carries immense significance in defining investment behaviour of parents regarding their child's schooling and is expected to have a positive relationship with investment in schooling. Therefore, we add an index of characteristics of government schools and private schools S_j to control for the quality of government and private schools. The vector S_j includes government and private school characteristics because unlike private schools, government schools respond to factors other than market forces (e.g. political pressures and policy perspectives) and attempt to cater to the educational needs of the region. Government schools are not completely unrelated to demand for schools but they are less related in comparison to private schools.

Where S_j is consists of four characteristics; teacher qualification, medium of instruction, infrastructure and child safety. For teacher qualification, the proportion of teachers who have a master's degree in a particular cluster is calculated. Moreover, for medium of instruction, the proportion of government/private schools that are Urdu medium in a particular cluster is calculated. Similarly, for infrastructure of the school and child safety we utilize the question

“Whether the building of the school is made mostly from *pacca* bricks” and “Does the school have a boundary wall/fence” respectively to generate variables for the proportion of government/private schools in a particular cluster which have a building made from bricks and which has a boundary. Using principal component analysis, indexes of school characteristics are generated.

DATA

The study employs the Privatization in Education Research Initiative (PERI) to estimate the impact of parental aspirations on school choice in selected tehsils of rural Punjab. 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). A total of 1024 households were surveyed in 64 clusters spanning over 8 tehsils in 7 districts (CREB, 2011). It includes information on household characteristics such as location, age, gender, employment status, education attainment, earnings, and community characteristics, parents' perceptions about schooling and individual characteristics.

The rationale behind selecting this data set is that it is comprehensive and there are separate sections on parents' aspirations and investment in schooling factors, providing us with the information to conduct this analysis. Moreover it is the most recent data and no such study has been conducted using this particular data set. The data set includes both child and household level characteristics necessary for the analysis. Parent's aspirations module in PERI has detailed information about parent's beliefs corresponding to each child of the household aged between 3 and 18 years.

In this survey, parents of 1,870 children were surveyed who were between 3 to 18 years old. Among these children, 1,190 are currently enrolled in school and 680 are at present not attending school. For the rest of the paper, however, the working sample will comprise of 931 children who are between 5 to 14 years of age, inclusive and are currently enrolled. The reason for choosing children in this particular age bracket is that the standard age for starting primary school is 5 years that is why children who are below 5 years of age are not taken in the working sample.

Investment in human capital is categorized as two variables; (i) Private school enrolment and, (ii) Total expenditure on schooling. For estimation purposes Private school enrolment variable takes the form of a dichotomous variable taking a value of 1 if a child is currently enrolled in private school and 0 otherwise. Whereas total expenditure on schooling variable is created as a summation of per month expenditures on tuition fees, admission fees, examination fees, expenditure on uniform, shoes, books, funds and donations, private tuition fees and transport costs.

The main aim of this study is to identify the mechanism between parents' aspirations and investment in schooling. Descriptive statistics shows that on average parents of children who are in the sample, expect their children to attain education till grade 12 (high school education). According to nature of the data it can be observed that the average educational attainment level desired by parents is higher partially because only parents of those children were interviewed who are currently enrolled in school. On the other hand, it can be deduced from the descriptive that on average parents spends 275 Rs. Per month on education of their children. Moreover, it also shows that around 25% of the sample is enrolled in private school whereas the rest are enrolled in government school or other schools. Among the children going to school, 56% of them are males which show that in rural areas of Punjab investment in human capital is biased towards boys. Furthermore, fathers of the sample children are more educated than their mothers which further shows that there exists a persistent trend of educating male children in the rural Punjab.

Table 1: Descriptive Statistics

	Total Sample	Male	Female
Outcome Variable			
Private School Enrolment*	0.26	0.25	0.28
	0.44	0.43	0.45
Total Expenditure on Schooling	228.71	236.97	218.84
	441.24	502.99	353.89
Explanatory Variables			
<i>Individual Characteristics</i>			
Parental Aspirations	12.73	13.40	11.93
	3.80	3.77	3.68
Age	9.38	9.41	9.34
	2.73	2.71	2.76
Gender*	0.54		
	0.50		
Number of Older Siblings	1.92	1.97	1.85
	1.91	1.90	1.91
Ability	2.25	2.23	2.26
	0.53	0.52	0.54
<i>Household Characteristics</i>			
Father's Education	4.24	4.04	4.49
	4.53	4.49	4.56
Mother's Education	1.66	1.71	1.59
	3.20	3.24	3.16
Wealth Index			
Low	-3.29	-3.29	-3.30
	0.94	0.91	0.99
Medium Low	-1.44	-1.49	-1.36
	0.46	0.47	0.44
Medium	0.08	0.09	0.07
	0.46	0.47	0.46
Medium High	1.57	1.61	1.52
	0.44	0.45	0.43
High	3.23	3.21	3.25
	0.79	0.82	0.76
Household Income	33.03	33.95	31.92
	139.86	160.50	110.40
Mother's Income	1.53	1.61	1.43
	15.60	15.91	15.24
<i>Community Characteristics</i>			
Index for Government School Characteristics			
Low	-1.67	-1.68	-1.66
	0.68	0.69	0.69
Medium Low	-0.53	-0.53	-0.52
	0.14	0.14	0.13
Medium	-0.02	-0.01	-0.02
	0.06	0.05	0.06
Medium High	0.45	0.42	0.48
	0.30	0.31	0.29
High	2.55	2.50	2.62
	1.72	1.72	1.73
Index for Private School Characteristics			
Low	-1.22	-1.25	-1.19
	0.64	0.65	0.63
Medium Low	0.00	0.00	0.00
	0.01	0.01	0.01
Medium			
Medium High			
High	1.07	0.93	1.27

	1.71	1.57	1.88
Community Characteristics			
Index for Government School Characteristics			
Low	-1.67	-1.68	-1.66
	0.68	0.69	0.69
Medium Low	-0.53	-0.53	-0.52
	0.14	0.14	0.13
Medium	-0.02	-0.01	-0.02
	0.06	0.05	0.06
Medium High	0.45	0.42	0.48
	0.30	0.31	0.29
High	2.55	2.50	2.62
	1.72	1.72	1.73
Index for Private School Characteristics			
Low	-1.22	-1.25	-1.19
	0.64	0.65	0.63
Medium Low	0.00	0.00	0.00
	0.01	0.01	0.01
Medium			
Medium High			
High	1.07	0.93	1.27
	1.71	1.57	1.88

Notes: Standard Deviations are in parenthesis

* = dummy variable, the mean represents the proportion of variable

Source: Author's Calculations

RESULTS AND EMPIRICAL FINDINGS

The focus of this study is to understand human capital investment decisions of parents for their children's schooling. In an attempt to underpin the relationship between parents' subjective aspirations and investment decisions regarding schooling of children, a cross sectional empirical analysis is conducted on Rural Punjab by using PERI 2011.

Ideally, the instrument, should have strong explanatory power for the specific endogenous variable but no correlation with error term. Therefore, the instrument should be informative and valid. In order to establish that change in the number of factories which are located within a 5km radius is an informative instrument, the coefficient of the instrument was considered. With the arrival of new factories, parents tend to develop high aspirations for the level of schooling that they desire for their child. Hence, exogenous changes like the arrival of new factories in the area can have a profound effect on parents' desired number of years of child's education. Moreover, Angrist-Pischke F-test was also conducted. The F-statistic from this test came out to be 23.81 which show that the instrument has enough explanatory power and is informative.

Moreover, in order to ensure the validity of the instrument, Hansen Sargen Test for overidentifying restrictions was also conducted with the instrument and the square of the instrument. The null hypothesis that all IVs are uncorrelated with the structural error was not rejected, supporting the validity of the IV. As outlined in section 3, new factories can impact investment in schooling through community and household specific aspects and confound the aspiration-investment relationship. So in order to ensure validity of the instrument, district dummies, household income, mother's income and wealth are also added as controls.

Table 2: First Stage Results for Investment in Schooling in Rural Punjab

Explanatory Variables	Parents' Aspirations
	Change in Number of factories located within a 5 km radius
Change in Number of factories located within a 5 km radius	0.0678*** (0.0139)
<i>Individual Characteristics</i>	
Age	-0.0375 (0.264)
Age Squared	0.00411 (0.0141)
Gender	1.607*** (0.311)
Number of Older Siblings	-0.201** (0.0867)
Ability	0.293 (0.408)
<i>Household Characteristics</i>	
Father's Education	0.0560 (0.0374)
Mother's Education	0.132*** (0.0493)
Wealth Index	0.290*** (0.0780)
Household Income	0.00133* (0.000666)
Mother's Income	-0.00819** (0.00341)
<i>Community Characteristics</i>	
Index for Government School Characteristics	-0.392*** (0.0893)
Index for Private School Characteristics	0.0476 (0.144)
Constant	11.11*** (1.355)
Districts Dummies	Yes
Number of Observations	931
TESTS	
<i>First Stage F-Test</i>	
F-Statistic	23.81
Prob>F	0.00
<i>Hausman Test</i>	
Ho: variables are exogenous	
Robust regression F(1,63)	0.14
P-Value	0.71
<i>Hansen Sargen Test (Overid)</i>	
Ho: instruments are jointly valid	
Sargan (score) chi2(1)	2.62
P-Value	0.11
Basmann chi2(1)	2.57
P-Value	0.11

Notes: Clustered standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

The results from the first stage regression indicate that parents' aspirations are motivated by the arrival of new factories in the region. With the arrival of new factories in the region, the

existing pool of economic opportunities increases. Due to the increase in the availability of new job prospects, the likelihood of finding a well paid job also increases. Hence, in the light of this new knowledge, parents adjust and recalibrate their desires and goals which they have set for their children. They are more likely to desire 0.0678 additional years of schooling for their child's education based on this exogenous change in the region which is why new factories have a positive and significant impact on aspirations.

The second stage uses the predicted values of the endogenous variable obtained from the first stage as regressor in the second stage along with other exogenous covariates to find the impact of parents' aspirations on human capital investment in rural Punjab. The second stage estimations are reported in Table 3. These estimations solve the endogeneity issue caused by reverse causality between parents' aspirations and investment in schooling. The marginal effects for IV Probit estimations are reported in the Appendix (Table A3). These probability derivatives highlight the effect of a unit change in independent variables on the dependent variable after keeping all other factors constant.

Table 3: Second Stage Results for Investment in Schooling in Rural Punjab

Explanatory Variables	Private School Enrolment			Total Expenditure on Schooling		
	Probit	IVProbit	HHFE with LPM	OLS	2SLS	HHFE with OLS
<i>Individual Characteristics</i>						
Parents' desired number of years of child's education	0.0430*** (0.0163)	0.0837 (0.117)	0.000915 (0.00575)	8.191** (3.115)	82.81** (37.46)	-5.352* (3.064)
Age	0.146 (0.122)	0.146 (0.123)	-0.0107 (0.0302)	15.03 (31.96)	17.23 (38.37)	-22.60 (18.32)
Age Squared	-0.0100 (0.00627)	-0.0101 (0.00629)	0.000105 (0.00156)	-0.0354 (1.601)	-0.313 (1.997)	2.089** (0.908)
Gender	-0.101 (0.100)	-0.166 (0.211)	-0.0293 (0.0291)	19.92 (21.80)	-99.98 (69.07)	11.47 (15.90)
Number of Older Siblings	-0.0267 (0.0317)	-0.0179 (0.0423)	-0.0198 (0.0178)	-13.30 (8.269)	2.329 (15.33)	-9.746 (11.26)
Ability	0.226** (0.0902)	0.212** (0.0974)	0.0562 (0.0375)	49.18 (40.69)	27.06 (55.00)	76.09 (60.09)
<i>Household Characteristics</i>						
Father's Education [‡]	0.0210 (0.0142)	0.0183 (0.0169)	0.00956 (0.00946)	8.066* (4.369)	3.657 (5.965)	0.971 (3.341)
Mother's Education [‡]	0.0283 (0.0226)	0.0224 (0.0274)	0.00744 (0.0216)	28.38*** (9.124)	18.48* (10.56)	8.739 (9.268)
Wealth Index	0.126*** (0.0370)	0.114** (0.0561)		20.06*** (7.042)	1.290 (14.61)	
Household Income	0.000561 (0.000461)	0.000500 (0.000476)		0.193* (0.0993)	0.0940 (0.111)	
Mother's Income [‡]	-0.00000909 (0.00341)	0.000338 (0.00351)	0.0483 (0.0317)	1.567 (1.907)	2.199 (1.810)	52.52** (24.93)
<i>Community Characteristics</i>						
Index for Government School Characteristics	0.0283 (0.0702)	0.0398 (0.0659)		14.57 (19.36)	35.99* (19.03)	
Index for Private School Characteristics	0.0246 (0.0964)	0.0242 (0.0971)		-21.81 (17.79)	-20.65 (19.54)	
Constant	-2.374*** (0.645)	-2.803** (1.340)	0.142 (0.182)	-213.9 (179.8)	-1035.7** (463.5)	51.95 (165.9)
Districts Dummies	Yes	Yes	No	Yes	Yes	No
Number of Observations	931	931	931	931	931	931

Notes: Clustered standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

‡ = variables which are defined in household fixed effects because certain household have a joint family system

Source: Author's Calculations

The coefficient for parents' aspirations for total expenditure on schooling in Table 3 is found to be positive and significant. According to literature, it is observed that parents who desire a higher level of education for their children are more likely to incur a higher expenditure on schooling. It implies that parents, who have higher aspirations for their children, are more likely to invest more in their child's schooling even without switching into private schools. This highlights that parents are generally more aware and motivated for educating their children, regardless of the type of school their child attends.

There may be a few possible explanations for this finding. It may be the case that parents consider investing in their child's education as a worthwhile investment. Parents might perceive that investing in a child's education entails high returns. These returns can be monetary and non monetary. Parents may consider that if they invest in their child's education, then he/she might be relatively more successful in securing a well paid employment as compared to someone who has not acquired education.

Moreover, parents might invest in educating their child because they may consider their children as a support in old age. This is because in the old age parents may become more dependent, both financially and morally on their children and if their children are more educated they are more likely to fend for their needs as well as that of their parents. In other words parents might invest in their child so that they can reap benefits in the future.

Furthermore, it might be that parents perceive educating their children as an important facet in the developmental process of their child and hence, are generally more aware of new economic opportunities as well better educational opportunities available in the area. More aware and well informed parents might recalibrate their aspirations according to exogenous changes like opening up a new factory and then further transform these high ambitions for their child by incurring high expenditure on human capital development.

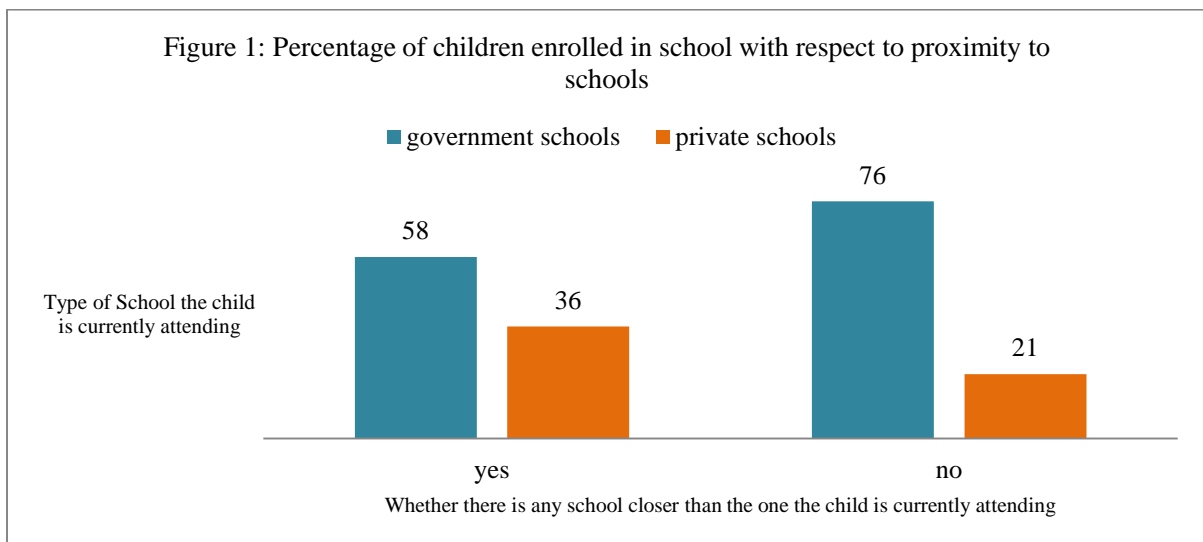
On the other hand, when the choice of school type is taken into account the findings contradict existing literature, and do not show a significant relationship between parental aspirations and private school enrolment. If an impact of aspirations on investment in schooling exists, then it is known with 95% confidence that this effect is no larger than a probability of 0.41 for private school enrolment. Intuitively, it can be observed that either children are staying in the same type of school or they may be switching between the same type of schools, i.e. private schools and other private schools or government schools and other government schools. Regardless, parents are incurring higher expenditures on their schooling or at least inputs of schooling (as stated above).

One possible explanation for this finding may be that aspirations are usually formed for different levels of education and since IV is arrival of new factories so it will capture the LATE of availability of economic opportunities only. So those who are affected by the arrival of new factories may not be the set of people who chose between private or public school which is why no effect is found. Moreover, it may be the case that investment in school is motivated by other choices like school tuition fees, uniform, books or choice between cheaper and expensive schools rather than the choice for the type of school.

Moreover, another probable justification for the difference in findings of private school enrolment and total expenditure on schooling may be because there is a trade off between quality of education and quantity of education. Parents may desire to attain more years of schooling for their children in an average/low quality school (public schools) rather than getting fewer years of schooling in a high quality school (private schools). This might explain why a substantial impact is found in the case of total spending on schooling whereas no impact is found for private school enrolment. One interesting aspect of this is the quality-quantity relationship is that parents may seem to be going both for higher quantity (reach a

higher grade) and higher quality (more expenditure up front). It could be that they are expanding on both margins, or that they are investing in quality now to ensure the child can learn enough to proceed to the following grades. It may also be the case that private schools are not necessarily high quality schools, that is why parents prefer to enroll their children in government school, which may be relatively higher in quality than private schools.

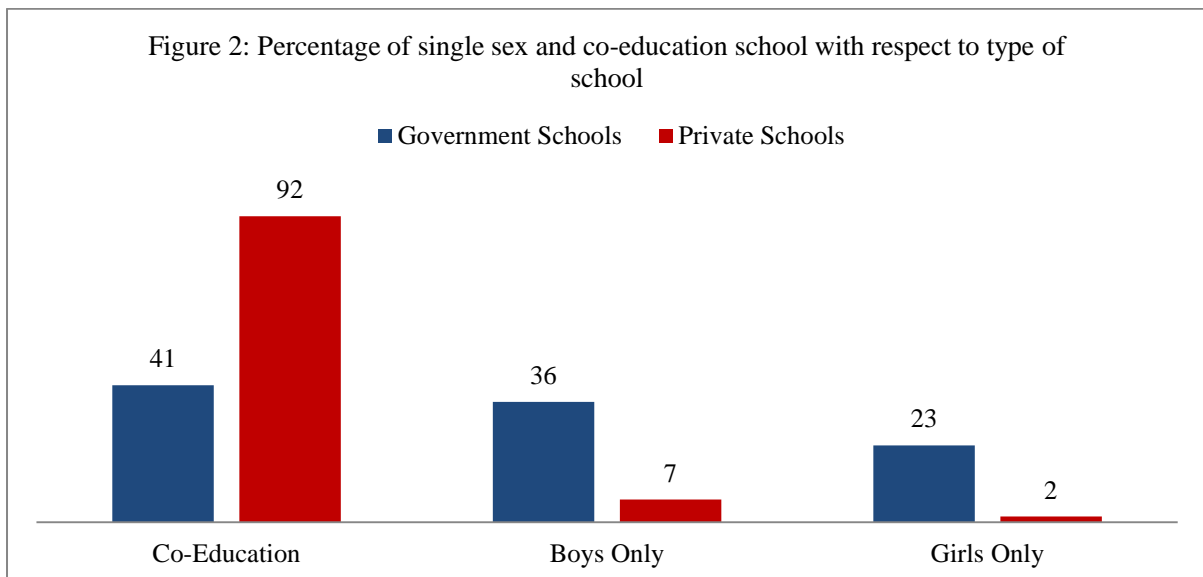
Apart from demand side factors, supply side factors can also be the rationale for this finding. Access to school plays a crucial role in deciding for a particular school. If a private school is located further away than a public school, parents are more likely to prefer a school which is nearer (public) rather than a school which is further away (private).



From the descriptive statistics it can be viewed from Figure 1 that majority of the children are going to the nearest possible school because 55% of the parents reported that there is no school closer than the one their children are currently attending. Among those who are going to the nearest possible school 76% are going to government schools whereas 21% are going to private schools. This supports the result of aspirations on private school enrolment because of supply side factors like availability of private schools plays a vital role in investment decisions. Even if there is a school closer to the school that the child is currently attending,

majority children are enrolled in government schools. This highlights an important supply side issue that overall there may be fewer private schools which is why majority children are enrolled in government schools.

Another possible explanation for not finding an impact can be that majority of the private schools are co-education schools. In rural Punjab it can be observed that culture and ethnic background plays a significant role in investment decisions. Based on these cultural norms and traditions, parents are more likely to prefer schools that are single sex schools for their children rather than co-education. From Figure 3 it can be seen that 92% of the private schools are co-education whereas only 41% of the government schools are co-education. Thus, even if parents want their child to study in a private school, they may not get their child enrolled in a co-education school. This may be why no impact is found for private school enrolment.



However, the findings of household fixed effects for private school enrolment highlight that there is no relationship between aspirations and investment in schooling. But for total expenditure on schooling, the coefficient shows that there is a statistically negative relationship. From the estimations it can be deduced that once the heterogeneity across household is controlled for, parents' desire for the level of education they want for their

children, induces a decline in spending. This shows that parents might have high aspirations for their children but when it comes to spending on education, they end up spending less. This is in line with the previous findings that private school may not be necessarily high quality schools, that is why parents may prefer to spend on high quality government schools which are less expensive than low quality private schools.

Table 4: Second Stage Results for Investment in Schooling for different males and females in Rural Punjab

Explanatory Variables	Private School Enrolment		Total Expenditure on Schooling	
	IVProbit for Male children	IVProbit for Female children	2SLS for Male children	2SLS for Female children
<i>Individual Characteristics</i>				
Parents' desired number of years of child's education	0.105 (0.127)	0.0359 (0.135)	150.8*** (42.38)	-35.99 (33.61)
Age	0.106 (0.162)	0.261 (0.225)	26.39 (90.58)	-19.13 (38.34)
Age Squared	-0.00926 (0.00850)	-0.0148 (0.0118)	-0.628 (4.624)	1.531 (2.047)
Number of Older Siblings	0.00176 (0.0546)	-0.0419 (0.0482)	35.55 (25.69)	-25.88** (12.61)
Ability	0.237* (0.129)	0.192 (0.144)	33.23 (99.77)	41.61 (40.24)
<i>Household Characteristics</i>				
Father's Education	0.0125 (0.0220)	0.0272 (0.0197)	3.593 (10.06)	3.650 (4.763)
Mother's Education	0.0535* (0.0284)	-0.000834 (0.0461)	31.65* (16.38)	26.66* (15.11)
Wealth Index	0.106 (0.0681)	0.130** (0.0552)	-15.86 (21.97)	33.07** (15.56)
Household Income	0.000298 (0.000499)	0.00116** (0.000570)	-0.00462 (0.147)	0.181 (0.161)
Mother's Income	0.00174 (0.00306)	-0.00328 (0.00374)	3.730** (1.893)	-0.517 (0.447)
<i>Community Characteristics</i>				
Index for Government School Characteristics	0.0378 (0.0803)	0.0349 (0.0631)	62.59*** (23.37)	3.967 (16.64)
Index for Private School Characteristics	0.0433 (0.125)	-0.0276 (0.102)	-9.869 (33.34)	-20.54 (19.65)
Constant	-3.232** (1.446)	-2.661 (2.164)	-2252.8*** (693.5)	571.1 (457.5)
District Dummies	Yes	Yes	Yes	Yes
Number of Observations	507	424	507	424

Notes: Cluster standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

Table 5: First Stage Results for Investment in Schooling in Rural Punjab for males and females

Explanatory Variables	Parents' Aspirations	
	Males	Females
Change in Number of factories located within a 5 km radius	0.0688*** (0.0135)	0.0685*** (0.0192)
Individual Characteristics		
Age	0.152 (0.409)	-0.414 (0.386)
Age Squared	-0.00577 (0.0215)	0.0237 (0.0208)
Number of Older Siblings	-0.279** (0.127)	-0.113 (0.0802)
Ability	0.315 (0.575)	0.277 (0.431)
Household Characteristics		
Father's Education	0.0697* (0.0360)	0.0441 (0.0508)
Mother's Education	0.0458 (0.0616)	0.238*** (0.0653)
Wealth Index	0.300** (0.120)	0.280*** (0.104)
Household Income	0.00142** (0.000593)	0.000814 (0.00162)
Mother's Income	-0.00773 (0.00695)	-0.00468 (0.00291)
Community Characteristics		
Index for Government School Characteristics	-0.443*** (0.0906)	-0.311** (0.151)
Index for Private School Characteristics	-0.0336 (0.201)	0.155 (0.157)
Constant	12.21*** (2.155)	12.54*** (1.977)
Districts Dummies	Yes	Yes
Number of Observations	507	424
TESTS		
<i>First Stage F-Test on excluded instrument</i>		
F-Statistic	25.96560	12.7091
Prob>F	0.00000	0.0007
<i>Hausman Test</i>		
Ho: variables are exogenous		
Robust regression F(1,63)	0.22262	0.002595
P-Value	0.63870	0.9595
<i>Hansen Sargen Test (Overid)</i>		
Ho: instruments are jointly valid		
Sargan (score) chi2(1)	2.07229	0.591765
P-Value	0.15000	0.4417
Basmann chi2(1)	1.99871	0.56464
P-Value	0.15740	0.4524

Notes: Clustered standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

Furthermore, in an attempt to understand aspiration investment mechanism better, the specification was extended to gender. Separate specifications were run for male and females. A positive and significant relationship was found between aspirations and total expenditure on schooling for boys i.e. parents who have higher aspirations for boys invest R.s 150.8 more per month, whereas no relationship is found for girls. However, important thing to note here is that the First stage F-test of excluded instrument for girls is still high (12.7091) which shows that arrival of new factories still increase aspirations for both the genders. From the first stage regression it can be deduced that arrival of new factories increases the desire level of schooling by 0.0688 years for boys and 0.0685 years for girls. However, from the second stage regression it can be observed that this increase in aspirations translates into an increase in investment for boys only.

There are various possible explanations for this finding. A possible rationale for this finding may be that parents usually view boys to have more potential to be on the labour market which is why parents may focus on more on providing quality education to boys rather than girls. Although parents may want their girls to attain a particular level of education but quality of education is considered a less important issue for girls as compared to boys because mostly girls do not enter the labour market formally.

Moreover, boys are considered to be the bread earners of the family. Parents perceive that spending on boys' education is more fruitful because an investment now can lead to better employment opportunities in the future and income inflow will increase. So, parents tend to invest today for better economic prospects. It might be the case that these new economic opportunities are specifically for boys rather than girls. This finding is in line with literature and implies that parents consider investing in boys as meaningful because they are viewed to be breadwinners for the family. Not only are male children perceived to be a financial support

by their parents in the future, but they are also seen as a support in old age. Although parents are more aware about the economic prospects in the region and they desire higher number of years of schooling for both the gender, but parents might invest in boys because they perceive investing in boys more fruitful.

Apart from this, a clear distinction exists between the roles assigned to male and female in the context of labour. This means that it may be possible that the nature of work being done in these factories is more appropriate for boys rather than girls which is why parents may prefer to invest more in boys than girls. Moreover, from the first stage it can be observed that arrival of new factories increases aspirations for both, but due to the nature of work required in these factories that effect was not translated into investment in schooling. Furthermore, in literature on resource allocation according to gender, it can be observed that parents are more likely to allocate resources for male children.

Besides this, another probable justification can be social institutions like marriage. This institution may change parental preferences accordingly, for instance, they may be well aware of the fact that daughters will be married in the near future and will be going to their in laws along with dowry which is mostly likely to impose a financial burden on the parents. So, parents might save for their daughter's marriage rather than spending on her education. In addition to this, since daughters go to their in laws after marriage, parents may spend less on education because they believe that the returns to her education will bear fruit only to her in-laws instead of them. On the other hand for boys, parents may be certain that after marriage sons are going to live in the same house with them so it is more appropriate and beneficial to educate boys.

Table 6: Household Fixed Effects for Investment in Schooling across gender in Rural Punjab

	Private School Enrolment	Total Expenditure on Schooling
Explanatory Variables		
<i>Individual Characteristics</i>		
Parents' desired number of years of child's education	-0.00105 (0.00637)	-7.938** (3.335)
Age	-0.0111 (0.0303)	-23.16 (18.41)
Age Squared	0.000144 (0.00156)	2.141** (0.912)
Gender	-0.106 (0.0679)	-89.75* (53.45)
Gender*Aspirations	0.00583 (0.00544)	7.679* (4.462)
Number of Older Siblings	-0.0184 (0.0170)	-8.019 (11.05)
Ability	0.0571 (0.0378)	77.25 (59.82)
<i>Household Characteristics</i>		
Father's Education	0.00954 (0.00933)	0.950 (3.317)
Mother's Education	0.00782 (0.0213)	9.239 (8.962)
Wealth Index		
Household Income		
Mother's Income	0.0482 (0.0315)	52.50** (24.69)
<i>Community Characteristics</i>		
Index for Government School Characteristics		
Index for Private School Characteristics		
Constant	0.161 (0.185)	77.63 (172.0)
District Dummies	No	No
Number of Observations	931	931

Notes: Cluster standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

However, when differences across gender were taken into account, the findings of household fixed effects for private school enrolment show that there is no relationship between aspirations and investment in schooling. But for total expenditure on schooling, the coefficient shows that there is a statistically negative relationship, similar to that in Table 3. The regression in Table 6, indicates that when it comes to investment in schooling, there is substantial gender bias. From the estimations it can be deduced that once the heterogeneity across household is controlled for, parents' desire for the level of education they want for

their female children, induces a decline in spending whereas parents who have higher aspirations for their male children tend to spend 7.679 Rs more, as compared to female children. This finding is in line with the findings of Table 5 which indicates that parents may have high aspirations for both, boys and girls; however, parents prefer to invest in boys more in comparison to girls. This is in line with the previous findings that due to other factors there exists a substantial gender bias in investment decisions of the household.

Therefore, the findings highlight that parents desire a high level of education for their children based on whether their child can reap returns in the future for investment today. According to literature it is observed that parents form these aspirations on the basis of employment opportunities available in the area and on the basis of differential abilities of their children. From the estimations it can be deduced that aspiration formed on the basis of new employment opportunities are more likely to have an influence on schooling investment rather than aspirations formed on the basis of ability of children.

Moreover, findings imply that parents who have higher aspirations for their children are more likely to incur higher expenditure on schooling rather than getting their child enrolled in private school. It might be the case that either the child is staying in the same type of school or they may be switching within the same type of schools, i.e. private schools and other private schools or government schools and other government schools. Regardless, parents are incurring higher expenditures on their schooling or at least inputs of schooling. Moreover, apart from the demand side factors, supply side factors such as availability of schools, access to school and whether a school is unisex or co-education might also play an important role in determining the level of investment in schooling.

Additionally, it can also be deduced from the results that although new factories do have an impact on aspirations for girls but these high aspirations for girls are not translated into

investment in schooling. Instead, a positive impact of aspirations on investment is observed for boys. Due to the nature and demand of work required in labour market and the notion that boys are more likely to enter the labour market formally, providing quality education to boys might be considered more important. Whereas, for girls there is a trade off between investing in marriage, in the form of dowry or investing in schooling. So household that are more likely to face a budget constraint allocate resources accordingly to maximise their future benefits.

5.1. Robustness Checks

In order to verify the results obtained robustness checks were done. To deal with the issue of parents who works in factories because they are more likely to encourage their child to follow the same profession because usually child's education is company funded and all expenses are borne by the factory or in some cases these factories specifically run schools for their employees' children. Since, parents work in factories so it might be the case that parents do not need to incur high expenditure. Hence, as a robustness check, specification was run for children whose parents are not working in the private sector (Table A5) The results were in line with the previous findings that investment is motivated by high aspirations regardless of whether parents work in private sector or not.

Furthermore, separate regressions were run for children who are currently enrolled in a school and belong to 5-10 year age group so check for robustness of the results (Table A4). The same results were found for these children as well. Parents were found to incur more expenditure on schooling regardless of the type of school the child attended. In addition to this, in order to check whether the arrival of new factories is inducing parents to make their children work rather than spending on their education, a specification was run with child labour as the endogenous variable and it was found that child labour had no impact on

investment in schooling (Table A6). This finding eliminates any possibility of substituting education with working due to the arrival of new economic opportunities.

Moreover, specifications were run for different dependent variable. Instead of private school enrolment, medium of instruction as English was used as a dependent variable (Table A7). It was found that parents, who have high aspirations for their children, are less likely to send their children to English medium schools. One of the possible reasons can be the tradeoffs between quality and quantity. English medium schools may be more expensive than Urdu medium schools. So, parents might prefer to send their child to a low cost school for longer duration than a high cost school for short duration. Furthermore, instead of total expenditure on schooling, log of expenditure was used as the dependent variable (Table A8). Similar results were found, hence substantiating previous findings.

LIMITATIONS

There are few limitations of this research. Firstly, the directory of industries dataset has no information about the type of factory, i.e. whether a factory is labour or capital intensive. This limits the analysis because the number of workers that each type of factory hires would differ, hence impacting the aspirations-investment mechanism. Secondly, sample selection bias exists because for the analysis, this study takes into account children who are currently enrolled in the school. However, it is better to use the variable on aspirations for children who are currently attending school rather than those who are out of school because aspirations for children out of school are likely to have a very different impact on investment than it does for children in school or it may not have any impact. Moreover, from the descriptive statistics it can be observed that majority (76%) of the children who are 5-14 years of age are currently attending school. This implies that sample selection issue is less of a problem in this research, however, if a bias existed, expected direction of this bias is going to be downward.

Furthermore, with the arrival of new economic opportunities, the general price level in the region also increases because demand for inputs for the factory increases, thus inducing an increase in the price level. This also makes the cost of inputs of schooling higher, which may impact the aspirations investment mechanism. Hence, due to lack of data on prices, this study does not incorporate this dimension.

CONCLUSION

The focus of this study is to understand human capital investment decisions of parents for their children's schooling. In an attempt to underpin the relationship between parents' subjective aspirations and investment decisions regarding schooling of children, a cross sectional empirical analysis is conducted on Rural Punjab by using PERI 2010-11.

The results of this study indicate that parents' aspirations are motivated by the arrival of new factories in the region. With the arrival of new factories in the region, the existing pool of economic opportunities increases. Hence, in the light of this new knowledge, parents adjust and recalibrate their desires and goals which they have set for their children. They are more likely to form higher aspirations for their child's education based on this exogenous change in the region.

Moreover, results points out that there is a noteworthy relationship between parents' aspirations and total expenditure on schooling. According to literature, it is observed that parents who desire a higher level of education for their children are more likely to incur a higher expenditure on schooling. It implies that parents, who have higher aspirations for their children, are more likely to invest more in their child's schooling even without switching into private schools. This highlights that parents are generally more aware and motivated for educating their children, regardless of the type of school their child attends.

On the other hand, when the choice of school type is taken into account the findings contradicts existing literature, and does not show a significant relationship between parental aspirations and private school enrolment. Intuitively, it can be observed that either children are staying in the same type of school or they may be switching between the same type of schools, i.e. private schools and other private schools or government schools and other government schools.

Regardless, parents are incurring higher expenditures on their schooling or at least inputs of schooling. Moreover, apart from the demand side factors, supply side factors such as availability of schools, access to school and whether a school is unisex or co-education might also play an important role in determining the level of investment in schooling.

Furthermore, in an attempt to understand aspiration investment mechanism better, the specification was extended to gender. A positive and significant relationship was found between aspirations and total expenditure on schooling for boys i.e. parents who have higher aspirations for boys invest more per month, whereas no relationship is found for girls. However, important thing to note was that arrival of new factories still increase aspirations for girls and boys and but this increase does not translate into increase in investment for girls. This indicates that parents might perceive that in comparison to girls, boys are considered as bread winners of the family and old age support of parents. Due to the nature and demand of work required in labour market and the notion that boys are more likely to enter the labour market formally, providing quality education to boys might be considered more important. Whereas, for girls there is a trade off between investing in marriage, in the form of dowry or investing in schooling. So household that are more likely to face a budget constraint allocate resources accordingly to maximise their future benefits.

However, when differences across gender were taken into account, the findings of household fixed effects for private school enrolment show that that there is no relationship between aspirations and investment in schooling. But for total expenditure on schooling, the coefficient shows that there is a statistically negative relationship. Moreover, it can be deduced that once the heterogeneity across household is controlled for, parents' desire for the level of education they want for their female children, induces a decline in spending whereas parents who have higher aspirations for their male children tend to spend more, as compared to female children.

This study highlights that parents' aspirations have an important role in determining the level of investment on their child's schooling. Due to exogenous shocks such as arrival of new factories, parents adjust and form aspirations for their child and in order to achieve them they invest in their child's education. This research can be extended to include university students and check how an exogenous shock in the economy can alter parents' aspirations for them and how they readjust their investment allocations accordingly. Moreover, this research can further be extended to urban areas to check if the results are more pronounced or not. Furthermore, it would give additional insight if researchers look at the long run to see whether girls actually go to school longer or not – whether it's a question of "empty" aspirations or that they go to school longer but don't invest more (i.e. parents go for quantity but not quality).

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APPENDIX

Table A1: Variable Definitions

Variable Form	Description	Units
Outcome Variable		
Private School Enrolment	Dichotomous Type of School the child is Attending? Private School = 1 and 0 otherwise	
Total Expenditure on Schooling	Continuous Summation of per month expenditures on tuition fees, admission fees, examination fees, expenditure on uniform, shoes, books, funds and donations, private tuition fees and transport costs	Rupee
Explanatory Variables		
<i>Individual Characteristics</i>		
Parental Aspirations	Continuous Till what class do you want your child to study?	Grades/Class
Age	Continuous Age of the child	Years
Gender	Dichotomous Sex of the child Male=1 and 0 otherwise	
Number of Older Siblings	Continuous Total number of older siblings of the child who is currently attending school	
Ability	Continuous How intelligent is the child in general? 1 = Below average, 2 = Average 3 = Above average	
<i>Household Characteristics</i>		
Father's Education	Continuous What is the educational level completed by the father of the child?	Years
Mother's Education	Continuous What is the educational level completed by the mother of the child?	Years
Wealth Index	Continuous <ul style="list-style-type: none"> • No. of items owned by household during the year: refrigerator, air conditioner, cooking range/microwave Oven, motorcycle/scooter, sewing/knitting machine, personal computer, bicycle and car/ vehicle. • What is the dwelling type? <ol style="list-style-type: none"> 1. Independent house / compound 2. Apartment / flat 3. Part of the large unit 4. Part of a compound 5. Other • How many rooms does your household occupy, include bed rooms and living rooms? • Does your household have a) electricity connection b) gas connection c) Telephone connection? <ol style="list-style-type: none"> 1. Yes 2. Yes, extension 3. No • What is the main source of drinking water for the household? <ol style="list-style-type: none"> 1. Piped water 2. Hand pump 3. Motorized pumping/ Tube well 4. Open well 5. Closed well 6. Pond 7. Canal / River/Stream 8. Spring 9. Other 	Index
Household Income	Continuous What is total household income on monthly basis?	Rupees
Mother's Income	Continuous What is mother's income on monthly basis	Rupees
<i>Community Characteristics</i>		
Index for Government School Characteristics	Continuous • In this school, what is the number of teachers who have the following qualifications?	Index

	Variable Form	Description	Units
Index for Private School Characteristics	Continuous	1 less than Matric 2 Matric 3 F.A./ FSc 4 B.A./BSc 5 M.A. or above • What is the Medium of instruction at this school? 1 = Urdu 2 = English • The building of this school is mostly made from which material? 1 = Pacca bricks 2 = Katcha bricks/mud 3 = Other (specify) • Does this school have the following facilities: 1 = Boundary Wall/Fence 0 = No Boundary Wall/ Fence	Index
		• In this school, what is the number of teachers who have the following qualifications? 1 less than Matric 2 Matric 3 F.A./ FSc 4 B.A./BSc 5 M.A. or above • What is the Medium of instruction at this school? 1 = Urdu 2 = English • The building of this school is mostly made from which material? 1 = Pacca bricks 2 = Katcha bricks/mud 3 = Other (specify) • Does this school have the following facilities: 1 = Boundary Wall/Fence 0 = No Boundary Wall/ Fence	

Source: Author's Calculations

Table A2: Co linearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Ability	1.01	1.00	0.9918	0.0082
Parent's Aspirations	1.01	1.00	0.9918	0.0082
Mean VIF	1.01			
	Eigenval	Cond Index		
1	2.9137	1.0000		
2	0.0633	6.7869		
3	0.0230	11.2483		
Condition Number	11.2483			
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)				
Det (correlation matrix)	0.9918			

Note: Co linearity Diagnostic is to check co linearity between Parent's Aspirations and Parent's perception of child's ability. Variance Inflation Factor (VIF) and Tolerance are calculated to check multicollinearity between variables. A commonly given rule of thumb is that VIFs of 10 or higher (or equivalently, tolerances of .10 or less) may be reason for concern for multicollinearity. Moreover, As a rule of thumb if the condition number is 15, multicollinearity is a concern; if it is greater than 30 multicollinearity is a very serious concern. So in this model, VIF is lower than 10, tolerances are greater than 0.1 and condition number is less than 15. Hence, this indicates that multicollinearity is not an issue in this model.

Source: Author's Calculations

Table A3: Marginal Effects for Investment in Schooling

Explanatory Variables	Private School Enrolment			
	Probit ^a	IVProbit ^b	IVProbit (Males) ^c	IVProbit (Females) ^d
<i>Individual Characteristics</i>				
Parents' desired number of years of child's education	0.0122309 (0.0047421)	0.0837205 (0.1172678)	0.1054754 (0.1273216)	0.0359117 (0.1354324)
Age	0.0416194 (0.0356004)	0.1460366 (0.122603)	0.1058847 (0.1616706)	0.2612872 (0.2248464)
Age Squared	-0.0028563 (0.001842)	-0.0100965 (0.0062933)	-0.0092597 (0.0085028)	-0.0148274 (0.0118475)
Gender	-0.0286046 (0.0287268)	-0.1657164 (0.2108653)		
Number of Older Siblings	-0.0076084 (0.0089528)	-0.0178954 (0.0423067)	0.0017642 (0.0545651)	-0.0419406 (0.0482303)
Ability	0.064396 (0.0255551)	0.2118141 (0.0973849)	0.2367376 (0.1290744)	0.19225 (0.1442911)
<i>Household Characteristics</i>				
Father's Education	0.0059654 (0.0040604)	0.0183138 (0.0168733)	0.0125106 (0.0220101)	0.0272139 (0.0196669)
Mother's Education	0.0080399 (0.0062825)	0.0224293 (0.0274151)	0.0535374 (0.0284062)	-0.000834 (0.046089)
Wealth Index	0.0358257 (0.0102786)	0.1141691 (0.0561349)	0.1064551 (0.0681131)	0.1297347 (0.0551767)
Household Income	0.0001596 (0.0001294)	0.0004998 (0.0004763)	0.0002981 (0.0004992)	0.0011569 (0.0005701)
Mother's Income	-0.00000259 (0.0009705)	0.0003382 (0.0035063)	0.0017399 (0.0030558)	-0.0032752 (0.003742)
<i>Community Characteristics</i>				
Index for Government School Characteristics	0.0080441 (0.0199449)	0.0397689 (0.065862)	0.037811 (0.0802548)	0.0348769 (0.063126)
Index for Private School Characteristics	0.0069869 (0.0274661)	0.0242024 (0.0970766)	0.0433283 (0.1249408)	-0.0276021 (0.1022475)
Districts Dummies	Yes	Yes	Yes	Yes
Number of Observations	931	931	507	424

Notes: Clustered standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

a & b = marginal effects for probit and ivprobit regression in Table 3, c & d=marginal effects for ivprobit for males and females in Table 4

Source: Author's Calculations

Table A4: Second Stage Results for Investment in Human Capital in Rural Punjab for children who are 5-10 years of age

Explanatory Variables	Private School Enrolment			Total Expenditure on Schooling		
	Probit	IVProbit	HHFE with LPM	OLS	TSLs	HHFE with OLS
<i>Individual Characteristics</i>						
Parents' desired number of years of child's education	0.0587*** (0.0209)	0.0171 (0.185)	0.00356 (0.00521)	6.827** (3.270)	-18.51 (44.42)	-2.553 (2.631)
Age	-0.182 (0.307)	-0.141 (0.358)	-0.0440 (0.0620)	66.24 (79.85)	90.56 (107.4)	73.46 (51.23)
Age Squared	0.0126 (0.0199)	0.00984 (0.0234)	0.00324 (0.00437)	-3.614 (5.585)	-5.234 (7.469)	-4.623 (3.375)
Gender	0.0544 (0.120)	0.117 (0.305)	0.0232 (0.0308)	25.52 (26.72)	64.79 (69.39)	23.19 (17.65)
Number of Older Siblings	-0.0610 (0.0391)	-0.0702 (0.0588)	0.00870 (0.0155)	15.89** (7.910)	-21.97 (16.92)	-14.72 (11.11)
Ability	0.181 (0.113)	0.176 (0.128)	-0.0142 (0.0312)	76.89* (42.31)	74.60* (41.07)	78.25 (48.26)
<i>Household Characteristics</i>						
Father's Education	0.0154 (0.0171)	0.0183 (0.0190)	-0.00890 (0.00862)	6.913 (5.409)	8.801 (5.945)	-5.490 (3.954)
Mother's Education	0.0332 (0.0264)	0.0391 (0.0354)	-0.0276 (0.0275)	29.08** (11.41)	32.86** (12.58)	-1.623 (11.00)
Wealth Index	0.142*** (0.0458)	0.149*** (0.0501)		19.08** (8.993)	23.72* (13.79)	
Household Income	0.000568 (0.000430)	0.000611 (0.000436)		0.188* (0.0978)	0.218** (0.104)	
Mother's Education	0.00131 (0.00368)	0.00103 (0.00399)	0.0855* (0.0428)	2.990 (2.540)	2.830 (2.541)	59.86** (29.22)
<i>Community Characteristics</i>						
Index for Government School Characteristics	0.0409 (0.0791)	0.0279 (0.0772)		-0.406 (19.78)	-7.847 (17.73)	
Index for Private School Characteristics	0.114 (0.125)	0.113 (0.126)		-10.48 (21.03)	-11.26 (21.34)	
Constant	-1.202 (1.232)	-0.858 (1.986)	0.349 (0.217)	-410.6 (302.3)	-207.1 (360.3)	-256.6 (262.1)
Districts Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	597	597	597	597	597	597

Notes: Clustered standard errors are given in the parenthesis below estimates
 * = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

**Table A5: Second Stage Results for Investment in Human Capital in Rural Punjab
(excluding children whose parents are employed in private sector)**

Explanatory Variables	Private School Enrolment			Total Expenditure on Schooling		
	Probit	IVProbit	HHFE with LPM	OLS	TOLS	HHFE with OLS
<i>Individual Characteristics</i>						
Parents' desired number of years of child's education	0.0460*** (0.0168)	0.0810 (0.115)	0.000565 (0.00515)	8.509* ** (3.160)	80.24** (36.62)	-5.550* (2.958)
Age	0.172 (0.126)	0.172 (0.127)	-0.0108 (0.0311)	19.25 (32.78)	21.46 (38.90)	-20.70 (18.60)
Age Squared	-0.0114* (0.00645)	-0.0114* (0.00650)	0.000187 (0.00161)	-0.232 (1.639)	-0.467 (2.015)	2.044** (0.915)
Gender	-0.0903 (0.0991)	-0.144 (0.198)	-0.0190 (0.0285)	21.65 (22.36)	-88.65 (65.89)	15.92 (15.59)
Number of Older Siblings	-0.0286 (0.0327)	-0.0209 (0.0437)	-0.0180 (0.0161)	-13.50 (8.399)	1.755 (15.29)	-8.806 (11.17)
Ability	0.208** (0.0923)	0.195** (0.0986)	0.0582 (0.0377)	47.11 (41.42)	24.34 (55.57)	78.20 (61.30)
<i>Household Characteristics</i>						
Father's Education	0.0252* (0.0147)	0.0230 (0.0170)	0.0149 (0.0113)	8.436* (4.434)	4.332 (5.796)	1.301 (4.160)
Mother's Education	0.0329 (0.0225)	0.0279 (0.0275)	0.0336*** (0.0110)	28.82* ** (9.124)	19.32* (10.49)	15.89** (7.403)
Wealth Index	0.111*** (0.0391)	0.101* (0.0552)		18.74* * (7.269)	1.028 (14.29)	
Household Income	0.00157*** (0.000543)	0.00151** (0.000593)		0.312* * (0.127)	0.219 (0.155)	
Mother's Education	-0.00109 (0.00350)	-0.000792 (0.00363)	0.0210 (0.0239)	1.433 (1.913)	2.031 (1.836)	45.26* (24.51)
<i>Community Characteristics</i>						
Index for Government School Characteristics	0.0284 (0.0707)	0.0391 (0.0663)		15.47 (19.61)	37.79* (19.53)	
Index for Private School Characteristics	0.0158 (0.0992)	0.0158 (0.100)		-22.80 (17.91)	-21.23 (19.82)	
Constant	-2.580*** (0.680)	-2.958** (1.368)	0.0964 (0.185)	-244.1 (189.2)	1049.5* * (464.6)	28.20 (169.3)
Districts Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	916	916	916	916	916	916

Notes: Clustered standard errors are given in the parenthesis below estimates
* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

**Table A6: Second Stage Results for Investment in Human Capital in Rural Punjab
(Child Labor as variable of interest)**

Explanatory Variables	Private School Enrolment			Total Expenditure on Schooling		
	Probit	IVProbit	HHFE with LPM	OLS	TOLS	HHFE with OLS
<i>Individual Characteristics</i>						
Child Labor	-0.138 (0.202)	-3.831 (2.451)	-0.0846 (0.0604)	141.8 (112.2)	-7826.4 (15212.4)	-14.42 (77.32)
Age	0.136 (0.120)	0.175* (0.106)	-0.00970 (0.0301)	10.75 (31.26)	237.6 (458.5)	-21.35 (18.27)
Age Squared	-0.00939 (0.00619)	-0.0105 (0.00721)	0.0000471 (0.00156)	0.215 (1.570)	-12.13 (24.70)	2.024** (0.914)
Gender	-0.0366 (0.0918)	-0.0530 (0.0646)	-0.0277 (0.0251)	34.40 (22.96)	-39.10 (154.4)	2.864 (15.48)
Number of Older Siblings	-0.0345 (0.0311)	-0.0439 (0.0323)	-0.0201 (0.0179)	-14.02* (8.275)	-70.13 (104.0)	-9.524 (11.11)
Ability	0.243*** (0.0929)	0.110 (0.250)	0.0568 (0.0368)	52.02 (39.89)	28.87 (128.7)	74.04 (60.08)
<i>Household Characteristics</i>						
Father's Education	0.0226 (0.0140)	0.0108 (0.0230)	0.00962 (0.00956)	8.567* (4.367)	7.560 (29.12)	0.810 (3.079)
Mother's Education	0.0347 (0.0223)	0.0221 (0.0339)	0.00726 (0.0215)	29.28*** (9.098)	39.57 (36.39)	8.325 (9.014)
Wealth Index	0.133*** (0.0374)	0.0673 (0.141)		22.09*** (7.107)	23.58 (52.42)	
Household Income	0.000590 (0.000453)	0.000171 (0.000663)		0.208** (0.102)	-0.0549 (0.512)	
Mother's Education	-0.000271 (0.00351)	0.000842 (0.00236)	0.0459 (0.0317)	1.461 (1.914)	3.536 (4.829)	52.18** (25.65)
<i>Community Characteristics</i>						
Index for Government School Characteristics	0.0145 (0.0689)	-0.0574 (0.0717)		14.66 (19.36)	-122.5 (262.9)	
Index for Private School Characteristics	0.0266 (0.0939)	0.0646 (0.0748)		-23.90 (17.24)	86.12 (241.2)	
Constant	-1.855*** (0.663)	-1.275 (1.637)	0.156 (0.171)	-110.6 (166.9)	-844.9 (1589.8)	-10.04 (169.1)
Districts Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	931	931	931	931	931	931

Notes: Clustered standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

Table A7: Second Stage Results for Investment in Schooling in Rural Punjab (using Medium of Instruction as English as dependent variable)

Explanatory Variables	Private School Enrolment		
	Probit	IVProbit	HHFE with LPM
<i>Individual Characteristics</i>			
Parents' desired number of years of child's education	-0.0270 (0.0198)	-0.217** (0.0882)	0.000283 (0.00114)
Age	-0.240** (0.109)	-0.181 (0.121)	-0.0166* (0.00977)
Age Squared	0.0109* (0.00588)	0.00871 (0.00602)	0.000790 (0.000483)
Gender	0.0344 (0.0916)	0.341* (0.180)	-0.00770 (0.00938)
Number of Older Siblings	-0.0992*** (0.0358)	-0.112*** (0.0299)	-0.00293 (0.00479)
Ability	0.0582 (0.0973)	0.102 (0.120)	-0.00929 (0.00840)
<i>Household Characteristics</i>			
Father's Education	-0.0157 (0.0172)	0.0000440 (0.0172)	0.00154 (0.00179)
Mother's Education	-0.0528*** (0.0175)	-0.0113 (0.0314)	-0.000666 (0.000964)
Wealth Index	0.104*** (0.0328)	0.125*** (0.0248)	
Household Income	0.000483 (0.000307)	0.000604** (0.000260)	
Mother's Income	0.0207 (0.0144)	0.0132 (0.0125)	0.0000844 (0.00118)
<i>Community Characteristics</i>			
Index for Government School Characteristics	-0.197 (0.178)	-0.196 (0.145)	
Index for Private School Characteristics	-0.371* (0.204)	-0.268 (0.177)	
Constant	0.230 (0.742)	2.359** (1.193)	0.380*** (0.0538)
District Dummies	Yes	Yes	Yes
Number of Observations	931	931	931

Notes: Cluster standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations

Table A8: Second Stage Results for Investment in Schooling in Rural Punjab (using log of total expenditure on schooling as dependent variable)

Explanatory Variables	Log of Total Expenditure on Schooling		
	OLS	IVReg	HHFE with OLS
<i>Individual Characteristics</i>			
Parents' desired number of years of child's education	0.0432 (0.0283)	-0.286** (0.113)	-0.00339 (0.0162)
Age	0.111 (0.117)	0.102 (0.138)	0.0142 (0.0913)
Age Squared	-0.00199 (0.00594)	-0.000760 (0.00717)	0.00210 (0.00405)
Gender	-0.0719 (0.0951)	0.457** (0.207)	0.000404 (0.0604)
Number of Older Siblings	-0.0115 (0.0464)	-0.0805 (0.0630)	-0.0799 (0.0765)
Ability	0.242 (0.154)	0.340* (0.206)	0.317** (0.127)
<i>Household Characteristics</i>			
Father's Education	0.0409** (0.0179)	0.0603*** (0.0210)	-0.000692 (0.0180)
Mother's Education	0.0755** (0.0289)	0.119*** (0.0376)	0.0174 (0.0504)
Wealth Index	0.0875** (0.0411)	0.170*** (0.0561)	
Household Income	0.00163** (0.000645)	0.00207*** (0.000715)	
Mother's Income	0.00250 (0.00390)	-0.000292 (0.00478)	0.145* (0.0817)
<i>Community Characteristics</i>			
Index for Government School Characteristics	0.0148 (0.0737)	-0.0798 (0.0614)	
Index for Private School Characteristics	-0.101 (0.102)	-0.106 (0.118)	
Constant	2.112*** (0.672)	5.739*** (1.580)	3.112*** (0.773)
District Dummies	Yes	Yes	Yes
Number of Observations	931	931	931

Notes: Cluster standard errors are given in the parenthesis below estimates

* = significant at 10 percent, ** = significant at 5 percent, *** = significant at 1 percent

Source: Author's Calculations