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Gender Inequality in Education – Determinants of Girls' Enrolment at the Primary, Middle & Secondary/High School Level

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Abstract

This paper aims to study the factors influencing households' decision to send their girl child to school. There is a consensus among existing research on gender inequality that girls are discriminated against if household income is closer to the poverty line, whether above or below.

Gender inequality in education refers to girls being discriminated against in acquiring education with undesirable consequences on their freedom.

In recent literature, it is found that mother's education level, that is the more she is educated and qualified and her active participation in the labour force, have a positive influence in the girl child being enrolled in school.

In this study, Binomial Logit Model is used with data from Pakistan Social and Living Standard measurement (PSLM) Survey for the year 2012-13 to conduct econometric analysis on girls belonging to the age group 5-16 years. Thus primary, middle and secondary level schooling determinants are established.

It is found in this research that a working mother does not have a positive impact in the decision to enrol girls in school. The PSLM data reveals that a major reason for not enrolling is that either the girls are not willing or the parents are not willing to send their daughters to school.

Keywords gender inequality, literacy, basic education, primary education, middle school, secondary school or high school, culture, household decision (to send girls to school), father's education, mother's education, mother's workforce participation.

JEL classification H75, I24, O15

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"*If you are planning for a year, sow rice; if you are planning for a decade, plant trees; if you are planning for a lifetime, educate people*." - Chinese proverb

Introduction

For any society to progress on social, moral, economic and political grounds, it is imperative that gender equality prevails, thus ensuring rights of all citizens. At present, we as a nation are not providing symmetric environment to girls and women, mainly due to a patriarchal society. Besides low level of human development as represented by Human Development Index (HDI), Pakistan's record with respect to gender equality is also miserable. Pakistan's latest rankings out of 145 countries in various gender related indices are: 144 in Gender Gap Index (GGI), 143 for economic participation and opportunities for women, 135 in education attainment, 125 in health and survival and 87 in terms of political empowerment (refer to Table 1.1), while Pakistan's position in overall Gender Inequality Index is 121 out of 155 countries.

Table 1.1 Pakistan's Ranking in Various UNDP Gender Related Indices

Pakistan's Position in Various UNDP Gender Related Indices		
S. No	**Index**	**Ranking in 2015**
1	Human Development Index (HDI)	147th – out of 188 countries
2	Gender Gap Index (GGI)	144th – out of 145 countries
3	Economic Participation	143rd – out of 145 countries
4	Education attainment	135th – out of 145 countries
5	Health & Survival	125th – out of 145 countries
6	Political Empowerment	87th – out of 145 countries
7	Gender Inequality Index (GII)	121st – out of 155 countries

Source: http://reports.weforum.org/; http://hdr.undp.org/en/data

However, sustainable economic development may be achieved by empowering women with education, health, and by providing them socio-economic opportunities. First step towards empowering women is to ensure that school age girls must be enrolled and should be attending school.

This research explores the extent of gender inequality at primary_, middle-, and secondary level of education in Pakistan. It also analyses the factors or determinants affecting household decision regarding girl's schooling using the 2012-13 household survey.

Rationale

Gender equity in education plays a crucial role in economic welfare and development of a nation; because gender discrimination means underutilizing the talent. Among numerous voices for the justification of indiscriminate provision of education, a few quotations are reproduced below to emphasize the importance of this research.

According to Sen (2015), *"Sufficient interest must be shown by the state in providing basic education for all (irrespective of gender), as it is relevant to produce quality of human labour".* The Human Development Report, 2015 which is published by United Nations Development Programme (UNDP) declares that the female population have not yet attained gender equity, though major strides in three important aspects of human development, namely i) reproductive health; ii) empowerment; and iii) economic status, have been made since 1990. Discrimination against girls and women in health, education, political representation, labour force participation, etc., lead to negative repercussions for development of their capabilities and their freedom of choice.

Ban Ki Moon (United Nations Secretary General) while addressing International Humanist and Ethical Union in 2008 categorically stated; "*...investing in women is not only the right thing to do. It is the smart thing to do. I am deeply convinced that, in women, the world has at its disposal, the most significant and yet largely untapped potential for development and peace".* Kabeer and Natali (2013) state that "*compelling evidence exists regarding acceleration in growth where women have access to education, cash transfers, credit, and jobs; reducing gender gaps have positive implications for poverty reduction, decline in population growth, children's welfare and agricultural productivity".*

The World Bank former chief economist Lawrence (President Emeritus and Charles W. Eliot University Professor of Harvard University) stated that "*Investment in girls' education may well be the highest return investment available in the developing world"*

Study Objectives

This study aims to provide an insight into the reasons behind households' decision to send girls to school in the context of Pakistan. Thus the specific task of this research is to carry out an econometric exercise for highlighting statistically significant factors affecting household decision regarding girl's schooling using large household survey data of Pakistan Social and Living Standard measurement (PSLM) Survey for the year 2012-13. An attempt is also being made to explore regional (urban/rural) differences in terms of significance of determinants.

Literature Review

The review of relevant and most recent articles, presented below is organized in two distinct categories; gender inequality in education and factors affecting the decisions regarding child schooling.

Gender Inequality in Education

Klasen and Lamanna (2009) investigated the extent to which gender inequities in education and labour force participation play a role in adversely affecting the health of an economy. Running cross-country and panel regressions on data ranging from 1960 to 2000, the combined ''costs'' of gender inequality in education and employment is 0.9 – 1.7 percentage point less in the Middle East and North Africa, and 0.1–1.6 percentage point less in South Asia as compared to growth in East Asia. Gender asymmetry cause economic issues like lowering well-being of society and in principle are a violation of human rights.

UNESCO's (2010) report on "Why Gender Equality in Basic Education in Pakistan?" analyses data in light of gender parity in Pakistan's basic education. Out of a total of 146,691 primary schools, 48.3 percent are for boys, 31.5 percent for girls and 24.7 percent are coeducation schools. These figures starkly pronounce gender asymmetry where access to education is concerned. The report further elaborates that coeducation schools are not as common in the rural parts as are in urban areas. Though in Punjab, Azad Jammu & Kashmir (AJK) and Islamabad Capital Territory (ICT), the number of girls' schools are more than boys' schools. Urbanization and higher education attainment level of male family leads to a positive correlation with girls' education. Due to cultural reasons, girls often are not allowed to go to school where there are no

female teachers. As per Ministry of Education figures, there are 425,445 teachers, of which 53 percent are male and 47 percent female. Also there are relatively fewer female teachers in the rural areas. The Net Enrolment Rates (NER) are higher for boys than girls across Pakistan. In the region, Pakistan has the lowest NERs for both boys and girls, compared to Nepal, Bangladesh, Iran and India etc. According to the same survey literacy rate for women and girls are constantly lower than men and boys.

Unterhalter, Elaine (2006) assesses current methods for gender equality in education. The Millennium development Goals (MDGs) 2 and 3 have not been realized in the five years that have elapsed, as equal number of girls and boys are not enrolled and there is a failure to ensure equal numbers pass grade five. For the time period of 1990 – 2003, Pakistan's NER for girls fell from 62 percent to 50 percent. However, Gender Equity Index (GEI) for Pakistan rose in the said period, from 52 percent to 64.5 percent. GEI refers to equal presence in number of boys and girls at different levels of education system, that is, primary, secondary and higher education. This is explained by the fact that girls from richer families are encouraged to study and poorer children do not have access to school. The author points out that because of the discrepancy as has been witnessed in the case of Pakistan, it is important not to rely on any single measure like the NER, or GEI.

Lloyd, Cynthia B. et al., (2005) investigated the effect of gender differences prevailing in primary school and the decision by parents to enroll their children, in the context of rural Pakistan. Major change in education policy took place in the 1990s when the focus of funding was shifted from tertiary level or higher education to providing basic education. Government priority has shifted to achieve universal primary education and especially promoting girls enrolment at this level. Private schools have mushroomed all over the country, including in the rural areas suggesting the supply of state primary schools have not been able to keep up with the demand. For every one girls' primary school there exists two boys' primary schools, implies a weak demand for girls schooling. Primary data is collected from rural Punjab and the then North

West Frontier Province now Khyber Pakhtun Khwa (KPK), using Nested Multinomial Logit it is found that more parents will ensure schooling for their daughters if all girls' schools are available which provide quality education as parents also care about the quality of learning.

Klasen, Stephan (2002) explored gender inequality in education and its effects on long-term economic growth. The findings suggest that gender inequality in education directly affects economic growth by pulling down the normal level of human capital. Approximately 0.4 to 0.9 percent differences in annual per capita growth rates between East Asia and Sub-Saharan Africa, South Asia, and the Middle East is attributed to the differences in gender gaps in education in these regions. Klasen assumes that boys and girls have similar inborn abilities and that children with more abilities are more likely to acquire schooling; gender inequality in education means that less able boys have the chance to be educated compared to more capable girls. The results show distinct gender inequality in education in these regions: Sub-Saharan Africa, South Asia, and the Middle East and North Africa. Findings are particularly significant. Gender inequality in education weakens economic growth directly by lowering average human capital and indirectly it discourages investment.

Colclough et al. (1997) study the relationships among poverty, schooling and gender inequality in two African countries, Ethiopia and Guinea. Poverty at household and national level cause under enrolment of school age children and gender bias exists due to cultural norms more so than poverty. Field surveys find direct costs of schooling as a major reason not to send children to school in both countries. Most school age children who do not attend school are from poor households and majority of them are girls thus confirming lower demand for schooling among poor households. Empirical analysis show that enrolments have soared in both countries but the gender gap has widened. Rather than poverty, culture and norms have a causal relationship with gender equity in education.

Factors Affecting School Enrolment

Jamal, Haroon (2014) analysed the determinants of child activity that is, working, schooling, neither working nor schooling also known as idle; with respect to attending school in the age group of 5-14 years; in the province of Punjab (Pakistan). In order to study the reasons behind

any of the above activity mentioned, the author assesses the relative impact of poverty, gender equity in educational attainment, both parents' education and mother's autonomy in the household with respect to decision making regarding child activity. Jamal has used primary data of the Punjab Multiple Indicator Cluster Survey (MICS) conducted in 2010-11 and analysed it using Multinomial Logit model; he found household poverty to be a crucial factor in the decision not to send children to school.

Lodhi, Abdul Salam et al. (2011) considered five activities that children engage in, namely, secular schooling; religious education; child labour; a combination of child labour and secular schooling; and inactivity (including leisure). Primary research was conducted via field surveys in over 40 villages all over Pakistan; covering all the provinces. A total of 963 households were interviewed regarding the activities of 2,496 children. Multinomial Probit model was used for analysis. It was found that location that is, urban or rural and the child's gender had significant impact on the decision to enrol a child in secular school. Results pointed to a fact that rural girls had less probability of attending secular schools and had a higher to be engaged as child labour. Also, where parents were aware of the importance of secular schooling and appreciated its worth, still were more likely to their send boy child to school than their girl child.

Using *Pakistan Integrated Household Survey* 2001-02 (PIHS), Toor and Parveen (2004) found that "The analysis of the study indicates that the age of the child, parents' schooling particularly the mother's, income per capita of the household head and distance to school are relevant variables in explaining the probability of female enrolment at the primary school level".

Baluch and Shahid (2008) study the primary school enrolment status in Lahore, (a megalopolis city of Pakistan). Data set was taken from District-Based Multiple Indicators Cluster Survey (2003-04). The study was conducted by Planning and Development department in collaboration with the Federal Bureau of Statistics and United Nation Children Funds (UNICEF). OLS and Logit models are used for analysis. Size of the family, ownership of house, affordability, literacy ratio and dependency ratio are factors that contribute positively to enrolment decision. It is found that the distance from home to school is not a very significant factor in not sending children to school.

Rosati and Rossi (2003) analysed the determinants of children's school attendance and work hours in Pakistan and Nicaragua. Maximum likelihood estimator and independent Probit and Tobit regressions is used; evidence points to more children working for wages in Pakistan than in Nicaragua. The Pakistani survey of 1996 came from the Statistical Information and Monitoring Program on Child Labor headed by the International Labour Organization (ILO). The focus of the survey was on households that reported child labor in the age cohort of 5 to14 years. The Nicaragua survey, of 1998, was part of the Living Standards Measurement Study survey. 6,084 children between the ages of 6 and 14 years are the sample population. Rosati and Rossi conclude, to promote more school age children from low income households to enroll and study, cash transfer schemes can be used as incentive. But if it is not directed properly, this will be ineffective towards the poorest and most uneducated segment.

Ray, Ranjan (2001) studies the key determinants of child labour and child schooling. An interesting feature that has been detected in this analysis is the recognition of joint endogeneity of child labour, child schooling and child poverty. Nepalese and Pakistani data have been used for analysis. A sharp trade-off between child labour and child schooling was observed, with gender bias in favour of boys schooling. Ray says this bias is by far more in Pakistan. Child labour, child schooling and the poverty variables are jointly estimated by simultaneous equations estimation using a 3SLS estimation procedure. Girls experience considerably less schooling than boys in both Nepal and Pakistan. The author concludes "*An interesting result, with considerable policy significance, that seems to hold for both countries is that, while rising levels of adult education significantly and positively impact on child schooling, its anticipated negative impact on child labour is considerably weaker in absolute magnitude to the point of statistical insignificance in several cases*."

Cooray and Potrafke (2010) probed empirically the causes of gender inequality in education; whether political institutions or culture and religion are the reason for gender inequality.

The study used dataset of 157 countries from 1991-2006. The results show that "*The primary influences on gender inequality in education are culture and religion. Discrimination against girls is especially pronounced in Muslim dominated countries*." Data from the World Bank

Development Indicators is used in a cross-sectional model. Girls in South Asia and Africa suffer most gender bias.

Kazeeem et al. (2010) focus their research on Nigeria and discovered the major reason why families do not educate their daughters is due to insecurity around future returns on investment. Due to discrimination in labour market and daughter's marriage, many poor families do not believe that it is wise to invest in their girls' education. Nigerian society is male-dominated, thus it favours social, economic, and educational advancement of males. Logistic regression analysis reveals that both gender and parental socioeconomic status have a substantial influence on child's school attendance. Although gender is an important determinant of school attendance, indicators of household socioeconomic status, that is, household wealth and mother's and father's education are important. Further mother's education is more important than father's in sending the child to school. This is similar to the work of Duraisamy (2000).

Bacolod and Ranjan (2008) have used data from Philippines to study the impact of household wealth, income shocks, access to credit markets, child labour supply and the crucial issue of learning ability of the child; on the decision to send the child to school. The survey used is the Cebu Longitudinal Health and Nutrition Survey (CLHNS) and 2,192 children from randomly selected districts were analysed using Multinomial Logit Specification Tests. The findings confirm that household wealth together with the child's ability and motivation to learn, determine the schooling decision.

Duraisamy (2000) examined the determinants of child schooling in rural India; using the survey data of 1994 from National Council of Applied Economic Research (NCAER), of 1994. Econometric analysis is done using Maximum Likelihood Probit and Multinomial Logit. They found that the level of parents' education and family income considerably increase the probability of children attending school and not being engaged in work. He also pointed out that a mother's education relatively has more effect in the decision to send children to school. Access to schools within the village increases the chances of enrolment. Maternal education also causes more opportunities for a girl child's school enrollment and also reduces the work involvement of girls over boys.

The State of Primary, Middle & Secondary/High School Education in Pakistan

Pakistan Economic Survey (PES) 2015 -16 reports that though slight improvement is witnessed but substantial strides have not been made in literacy and education. As per the Pakistan Social and Living Standards Measurement (PSLM) Survey 2015, the literacy rate is 60% as compared to 58% in 2014, for population 10 years and above. The literacy rate for males in 2015 was 70% and for females 49%, revealing the existence of gender inequity. The literacy rate is higher in urban areas at 76% as compared to rural areas with 51%. Province-wise, Punjab comes at the top with 63% literacy rate, followed by Sindh at 60%, Khyber Pakhtunkhwa (KPK) at53 % and Balochistan at 44%.

Although education seems to be a priority with the policy makers, the 18th Amendment in the constitution in 2010, Article 25A states "*The State shall provide free and compulsory education to all children of the age of five to sixteen years in such manner as may be determined by law*"; but in practice education suffers as its budget has stagnated at 2% of GDP since a decade; as per PSLM 2014-15 report, in FY2015 budget allocated for education was 2.2% of GDP, an increase in 4.8% since FY2014 where the allocation was 2.1%.

Global Monitoring Report 2015 of United Nations Educational, Scientific and Cultural Organization's (UNESCO) Education for All (EFA) compares Pakistan's paltry budget allocation on education as a percentage of the GDP, to other countries in the region. [Table 3.1]

Table 3.1 Education Budget as Percentage of the GDP in the Region

S. No	Country	Expenditure on Education as a % of GDP
1	Pakistan	2.0
2	Bangladesh	2.1
3	India	3.2
4	Iran	4.7
5	Bhuttan	4.9
6	Maldives	8.0

Source: EFA Global Monitoring report 2015, UNESCO

UNESCO has set the target for Pakistan to increase its budgetary allocation to 4% of GDP by 2018, that is, to double the education budget.

Primary education is the most important and crucial stage for a child's education. In Pakistan, primary level education refers schooling from Grade 1 to Grade 5. According to Pakistan Economic Survey (PES) 2015-16, there were 166 thousands Primary Schools all over Pakistan with 431 thousands teachers actively serving in 2015.

Gross Enrolment Rates (GER) is referred to the participation rate of children attending primary schools divided by the number of children aged 5 to 9 years. A high GER indicates a high degree of participation, whether the students belong to the official age-group or not. A GER value approaching or exceeding 100 per cent indicates a country in principle able to accommodate all of its primary school-age population. It does not however, indicate the proportion of that population actually enrolled. On the other hand, Net Enrolment Rates (NER) at the primary level refers to the number of students enrolled in primary schools of age 5 to 9 years divided by the number of children in the same age group for that level of education. In Pakistan, the official primary NER is the number of children 5 - 9 years attending primary level (1-5 grades) divided by the total number of children aged 5 to 9 years.

GER at the primary level for the age group 5-9 years at national level during 2015 recorded at 89 percent, while provincial GERs are estimated at 97, 79, 90 and 71 percent for Punjab, Sindh, KPK and Balochistan respectively. Barring Punjab, significant gender gap is evident in primary gross enrollment rates among provinces. NER at the national level is estimated at 57 percent which is significantly below the national GER. In terms of provincial variations, Punjab is leading other provinces with the NER at 61 percent. The estimated NERs for KPK, Sindh and Balochistan are 56, 51 and 46 percent respectively.

Although the Millennium Development Goals (MDGs) have been replaced in 2016 with more elaborative Sustainable Development Goals (SDGs), it would be worth to analyze the state of primary education in the context of MDGs.

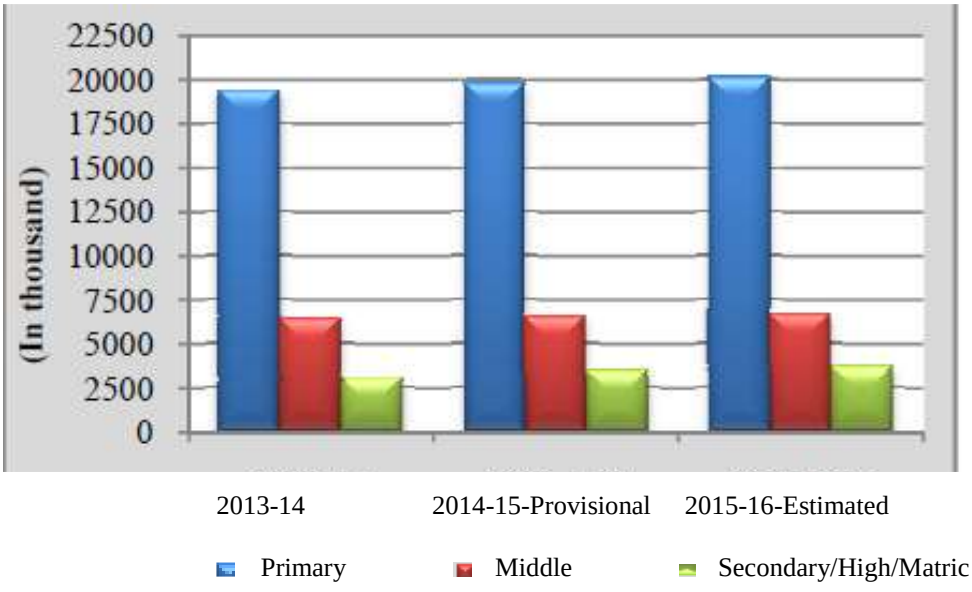
Goal 2 of MDG for Pakistan targeted 100 percent primary school enrolment, 100 percent completion of education from grades 1-5 and an 88 percent literacy rate. Rates of net primary

enrolment and completion increased up to the mid-2000s but thereafter slowed and fluctuated, and in 2014-15 were 57 percent and 50 percent respectively. The literacy rate in 2014-15 was 60 percent overall, but this was highly skewed towards males – 70 percent of males were literate compared to 49 percent of females. Pakistan has thus failed to achieve MDG goal 2.

Middle School refers to Grade 6 to Grade 8. The age cohort is 10 - 12 years for this level. According to PES 2015-16, 44.8 thousand middle schools with 380.8 thousand teachers were serving in 2015. Middle school enrolment increased by 1.5% that is to 6.6 million enrolments in 2015 from 6.5 million in 2014.

Secondary school or High school, that is, Grade 9 and 10, grade 10 is called matriculation (in the local system). The official age cohort is 13 – 14 years but generally students are nearly sixteen years old when they complete matriculation (due to enrolling in Nursery/Kindergarten at an older age). In the year 2015, 31.3 thousand secondary schools operated as compared to 30.6 thousand schools in the preceding year 2014. A 2.3 % increase in the number of Secondary or High schools was witnessed. The total number of teachers for Matriculation was 514.2 thousand approximately, as compared to 500.5 thousand in 2014. Secondary school enrolment at the national level increased by 12.9%, from 3.1 million in 2014 to 3.5 million in 2015.

Fig 3.1 Enrolment at each level



Source: http://www.finance.gov.pk/survey/chapters_16/10_Education.pdf

MDG goal 3 aimed to eliminate gender disparity in primary and secondary education by 2005, and in all levels of education by 2015. Gender parity in education has improved–for primary education, secondary education and youth literacy, but still falls short of the MDG targets set for 2015. Punjab, with its higher base, remains the leader in education indicators. However, provincial disparities between Punjab, Sindh and Khyber Pakhtunkhwa have narrowed with the exception of Balochistan province. Overall, Pakistan has also failed to achieve targets of all four indicators of MDG-3.

Another important international commitment with respect to education is the Dakar (Education for All – EFA) declaration. The year 2015 was important in the context that it marked the deadline for the participants, including Pakistan.

According to the Global Monitoring Report 2015 of United Nations Educational, Scientific and Cultural Organization's (UNESCO) Education for All (EFA), Pakistan has not reached any of the Education for All goals (EFA) with measurable targets, but made significant progress in closing the gender gap, particularly in the early years after 2000. When the goals were set, there were 68 girls enrolled for 100 boys. By 2007, there were 83 girls but this only increased to 87 by 2015.

The EFA review 2015 further elaborates on gender disparity at primary school level enrollment. In KP, the gender gap is high at 27 percent, while it is the highest in FATA at 42 percent. It is perhaps attributed to the tribal norms prevalent there, where not only girls but children of poor households are discouraged from attending school. Reverse gender gap exists in Islamabad; where there is higher enrollment rate for girls than boys. Balochistan and Sindh have gender gap of 12 percent approximately.

Of the enrolled children, only about 67 percent survive up to grade 5. The reasons vary from extreme poverty, shortage of schools, lack of good teachers (teachers are not trained and lack motivation), substandard quality of education and law and order situation. Islamabad has the highest survival rate of Primary School children at 82 percent and close behind is the province of

KP with 80 percent survival rate. Survival rates in Sindh, Balochistan and FATA remain low and are a cause for concern for the policy makers.

EFA Review 2015 also discusses the key challenges faced by the country in the field of education. These are: lack of access to education, poor quality of education, gender disparity, and bad governance. Crucial factors for the prevailing education emergency are poverty, cultural norms, adverse law and order situation; and devastation caused by natural disasters. Moreover, challenges are faced with poor teaching methods, teacher absenteeism, truancy and lack of textbooks. Punjab and KP have a higher rate of gross enrollment than national average; whereas Balochistan, Sindh and FATA have lower GERs than the national average. It is interesting to note that FATA and KP are displaying progress in spite of being troubled areas for years.

Research Methodology

This section discusses the methodology for assessing significant factors influencing girls' primary, middle and secondary/high school (matriculation) education in Pakistan. The methods and the procedures applied in this study have been motivated by the empirical studies conducted for developing countries. An enormous number of studies showed that family background or socioeconomic status, measured by parental education and household resources is an important determinant of children's education. Examples of these studies include; Handa et al.（2004）for Mozambique, Sawada and Lokshin（2001）for Pakistan, Singh and Santiago（1997）for Mexico, Glewwe and Jacoby（1994） for Ghana, Deolalikar（1993）for Indonesia, Singh（1992）for Brazil, Hossain（1989）for Bangladesh, Birdsall（1985）for Brazil, Behrman and Wolfe （1984）for Nicaragua and Rosenzweig and Wolpin（1982）for India.

Conceptual Framework

The human capital theory regards education as an investment so as to maximize lifetime wealth. According to this theory, additional schooling generates benefits in terms of enhanced future earnings. The individual will compare the direct and the opportunity costs of schooling with its future benefits. The investment will continue so long as the marginal rate of return to additional

schooling exceeds the prevailing cost of borrowing. In this model the optimal level of schooling increases with the returns to human capital and decreases with the cost of schooling.

In models of household production parents maximize a one period utility as a function of various determinants and subject to income and time constraints for the household members and the production functions (Becker, 1975). Assuming that parents have different preferences for their son's and daughter's education leads to gender specific reduced form demand functions for schooling. This differential preference may be a response to the actual or perceived differences in the labor market returns to female and male schooling (Rosenzweig and Schultz, 1982). The prevailing social norms or household resource constraints may also be important in producing gender specific schooling demand functions. If the society or parents do not see daughters as future providers, then parents may not invest in their daughters' education. If the labor market returns to men's schooling are higher than those to women's, then it will be efficient for the household to invest in son's schooling than in daughter's schooling. The external benefits of education such as increased nutrition and health, increased child schooling, reduced child mortality and fertility are not easy to quantify. However, such returns in developing countries are greater for female schooling than for male schooling (Behrman, 1990).

Hypotheses

Applying the above conceptual framework, the study hypothesizes that the parents' decision regarding girls' schooling at primary, middle school up to matriculation level, in the age cohort 5–16 years, is influenced by the following factors in the context of Pakistan:

i) Household Resources (Household income and Assets to determine poverty level)
ii) Education level of father
iii) Education level of mother
iv) Mother's participation in the labour force
v) Regional Impact of culture and norms

Empirical Specification

Decision of the parents regarding schooling of their daughters is specified as follows:

$$Y = \beta' x + \mu$$

Where x is a vector of explanatory variables (determinants) and μ is the normally and independently distributed disturbance term. β is the vector of coefficients to be estimated, while Y denotes the status of girls in the age cohort of 5-16 years whether enrolled or not.

The specified model is a binary choice model. Girls in the age cohort are assigned one if they are currently enrolled in any formal educational institution and 0 if they are not in school. Because the dependent variable is discrete rather than continuous, the application of ordinary least squares (OLS) is ruled out; OLS estimation method assumes that the dependent variable must be continuous and normally distributed. Estimation of models with binary dependent variables can employ three approaches; the Linear Probability Model (LPM), the Logit model or the Probit model (Gujarati 2007). This study however applies logit method for estimating reduced form of demand function for girls' schooling.

Four groups of explanatory variables are selected as determinants of schooling, i.e. child characteristics, parents' characteristics, household characteristics, and locational (regional) variables. Specifically, following Logit regression is estimated using Stata software.

Girl's Enrolment = f ((girl's age, household size, household resources/poverty level, father's education, mother's education, mother's labour force participation/empowerment, rural dummy and provincial dummy variables)

Dichotomous Dependent Variable, Y_i:

$Y_i = \beta_0 + \beta_1$ girl's age$_1 + \beta_2$ household size$_2 + \beta_3$ household resources$_3 + \beta_4$ father's education$_4 +$

β_5 mother's education $_5 + \beta_6$ mother's empowerment$_6 + \beta_7$ region$_7 + \beta_8$provinces$_8 + \varepsilon_i$

Data and Variables

Pakistan Social and Living Standards Measurement (PSLM) survey for the year 2012-13 is used for this analysis. PSLM surveys are conducted by Pakistan Bureau of Statistics (PBS) at district level and at Provincial level respectively in alternate years. PSLM collects information on key Social indicators which include; household size; educational status of household members, employment patterns, sources of income; consumption patterns; child health and immunization, household assets, housing structure and available housing facilities. The dataset for the year 2012-13 was collected at district level and contains information of 75,516 households.

Definition of Variables

Household size: The number of family members residing together in in household (family size)

Household Resources: include the per capita income, the asset score and the poverty status.

Per capita income: per capita income is calculated by calculating the sum of income earned by all members of the household in a year, including pensions, remittances etc., and this total income of the household is divided by the size of the household.

Asset Score: PSLM Survey contains details of possessions of households, including fixed assets like cultivated land, commercial plot etc., as well as durables like fan, refrigerator, iron etc.

Section F1 lists the fixed assets and section F2 lists the durables. Per household asset score is calculated by summing up the various belongings

Poverty status of household: Poverty rates for Pakistan have been revised based on 2013-14 Cost of Basic Needs (CBN) re-estimation. Rs.3030.32 per adult per month is the new threshold income to be labelled poor. In the econometric analysis, the dummy variable for poor is calculated with this rate (as per the new poverty line 29.5% population of the country is poor).

Father's education: Section E of PSLM survey contains the data regarding the level of education of father and each member of the household.

Mother's Empowerment: includes mother's labour force participation and if mother is literate and in the work force.

Mother's education: reveals the educational qualification of a mother

Mother labour force participation (lfp): this variable tells us if the mother is an earning member of the household. This is being used as a proxy for mother's autonomy in the household.

Region: results will vary for urban and rural households' decision to enrol the girls to school.

Provinces: Province-wise factors that influence households decision to enrol girl child.

Table 4.1 furnishes the definition of variables (determinants) used in the specified demand function for girls' enrolment.

Table – 4.1 Definitions of Variables

Definitions of Variables	
Dependent Variable	
Girl's Enrolment	1, if girl goes to school; 0 otherwise
Explanatory Variables:	
Child Characteristics:	
Age	Age of girl in the 5-16 age cohort
Parents' Characteristics:	
Father's Education	
Father's Occupation	
Mother's Education	
Mother's Participation in Labour Force	1, if mother is working for pay or profit; 0 otherwise
Household Characteristics:	
Per capita Income	
Household Asset Score	
Household Poverty level (Poor / Non-poor)	
Regional Impact:	
UR	1, if household is in Rural areas; 0 otherwise
Sindh	1, if household belongs to Sindh province; 0 otherwise
KPK	1, if household belongs to Khyber Pakhtunkhwa province; 0 otherwise
Balochistan	1, if household belongs to Balochistan province; 0 otherwise
Punjab	1, if household belongs to Punjab province; 0 otherwise

Results and Discussions

In the PSLM dataset of 2012-13, 23,598 households are urban and 51,414 are rural. Of these households, there are 12,830 poor households versus 10,768 non-poor households in urban areas. In rural areas there are 36,255 poor households against 15,159 non-poor households.

In the PSLM 2012-13 survey data, the cohort of girls between 5-16 years age are 48,430. Those not enrolled in school for various reasons, are 5008. In the survey, 4995 girls have cited several reasons for not going to school of which 615 girls have listed the distance to school as a reason. Distance to school is an important factor with policy implications. Table 5.1 lists the reasons as given in the PSLM survey; the table reveals the percentage of girls, having the listed concerns.

Table 5.1 Reasons for not going to school

S. No	Reasons for not being enrolled	Percentage of girls (age: 5-16 years) %
1.	Education is costly	12.33
2	Far away	12.31
3.	Substandard school	1.52
4.	Helping in domestic work	14.47
5.	Helping in work	2.56
6.	Parents do not permit	23.00
7.	Shortage of male teachers *	2.74
8.	Shortage of female teachers	0.02
9.	Ill/Incapacitated	1.54
10.	Minor age	0.20
11.	Child not willing	23.32
12.	Lack of documents	0.08
13.	Not useful	0.70
14.	Education completed	1.08
15.	Marriage	0.08
16.	Employment/Work	0.44
17.	Others	3.58

As can be seen from Table 5.1, lack of motivation in child to study ranks highest at 23.32% and close behind this reason is that parents do not allow these girls to acquire an education at 23%.

At the national level, 74.96% girls not enrolled between the ages of 5 and 16 are those whose mothers are not part of the workforce, having said that, there are 25.04% girls whose mothers are part of the labour force, yet they are not in school. Whereas of the 43,422 enrolled girls, 81.70% girls are those whose mothers are not working, only 18.30% girls currently studying in school have mothers who are active in the work force. This reveals that mother's labour force participation as a determinant has been found insignificant in this research.

Table 5.2 Determinants of Girls' Enrolment – Age 5 - 16 Years

[Binomial Logit Model: Dependent Variable: Enrolled = 1, Not-Enrolled = 0]

		Estimated Coefficients	*p*- Value	Marginal Effect
Household size	Number of members living together	-0.091	0.000	-0.0005
Characteristics of Child	Age of girl child	-0.525	0.000	-0.0030
Characteristics of Father	Education: grade completed	0.077	0.000	0.0004
Characteristics of Mother	Education: literate, grade completed	0.118	0.000	0.0006
	Empowerment: labour force participation	-0.223	0.135	-0.0014
Household Resources				
	Asset score	0.088	0.000	0.0005
	Poverty Status	-0.132	0.275	-0.0008
National				
Region	Urban/Rural	0.921	0.000	0.0062
Provincial:				
KPK		0.081	0.685	0.0004
Sindh		-0.658	0.000	-0.0045
Balochistan		-1.541	0.000	-0.019
Intercept		7.928		
Model Summary:	Wald Chi-Square	652.67		
	Pseudo R-Square	0.2947		

Notes: Marginal effects are calculated at the means of the independent variables.

p-Value zero or less than 0.05 indicates that the coefficient β is statistically significant at least at 95% confidence interval and rejects the null hypothesis $\beta = 0$.

With Prob > Chi2 = 0.0000 the model is statistically significant.

Conclusions and Policy Implications

This research explores the dynamics of girls' enrolment in the age cohort 5-16 years. PSLM 2012-13 provides standard information about households and its members; including information about children being enrolled or not and their reasons for not going to school.

The data in the survey reveals that 23.32 percent girls are not motivated to acquire knowledge through schooling. Another 23 percent are not allowed by their parents to study.

By way of policy implication, adult literacy campaigns must be revived to create awareness about the importance of being literate and educated, as education is a basic human right and must be provided inclusively if inclusive growth is to be achieved. Another important variable from the point of view of policy implication is the access to schools, that is, the distance to school.

Further study is possible by conducting primary research where supply side determinants like distance to school, is measured in kilometres.

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