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Determinants of participation in child's education and alternative activities in Pakistan

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Acknowledgements

Abstract

Using data from Pakistan, this study analyzed the effect of various individual, household, and community level characteristics on the probability that children engage in different activities. According to the existing trend of their prevalence, we considered five child's activities, namely: secular schooling; religious education; child labor; a combination of child labor and secular schooling; and inactivity (including leisure). Data was collected through field surveys conducted in over 40 villages in four Pakistani provinces: Balochistan, Khyber Paktunkhwa, Punjab, and Sind. A total of 963 households were interviewed on the activities of 2,496 children. Multinomial Probit model was used for the analyses. Results indicated that parental perception had significant relationship to the probability of engagement in secular school attendance, religious education, and child labor. In addition, we investigated the relationships between participation in the different child activities with location (rural/urban) and children's gender. We detected a lower probability of attending secular school and a higher probability of engaging in child labor among female children in rural areas. We also found that even parents who openly expressed appreciation of the importance of secular schooling were more likely to send male children to school than female children.

1 Introduction

Education is one of the essential tools for human resource development and a necessary element for the sustainable socio-economic development of a society, as it can facilitate economic growth through the broader application of knowledge, skills, and the creative strength of a society. The positive outcomes of education in the long-term include reduction of poverty and inequality, improvement of public health, and good governance in the implementation of socio-economic policies.

Previous studies on the role of education in economic growth suggest that education enhances human capital formation, which is positively associated with economic development and growth (Nelson and Edmund, 1966; Mankiw et al., 1992; Barro, 2001; Krueger and Lindahl, 2001). Similarly, Sianesi and Reenen (2003) suggest that, in addition to direct effects, education affects economic growth indirectly by stimulating the accumulation of productive inputs such as physical capital, technology, and health, which in turn foster economic growth by mitigating factors that obstruct economic growth like population growth and infant mortality. Therefore, multifaceted impacts of education make it an essential element of policy framework.

In terms of the effect of education on economic development and growth, studies have highlighted that the impact of different levels of education depends on the stage of development and the rate of economic growth of a country. According to Petrakkis and Stamatakis (2002), primary and secondary education is more important to growth in developing countries whereas higher education is imperative in economically developed countries. On the importance of primary education in developing countries, Self and Grabowski (2004) found a strong causal relationship with economic growth. Likewise, Barro and Lee (2001) and Psacharopoulos and Patrinos (2004) suggested that for low-income and developing countries, investment in education has higher private and social returns than in developed nations. Harmon et al. (2003) also concluded that there is an unambiguously positive effect on individual earnings from education and that this effect is relatively larger than the returns on investments in other public sectors, especially in developing countries. However, despite the proven positive impacts of investment in education on economic growth and development, low levels of investment in education and low literacy rates are

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persistent problems in many developing countries. This situation provides compelling support for the evaluation of factors that affect education at the level of individual countries to help determine appropriate and sustainable solutions.

The future literacy rate and the degree of human capital formation in a country depend on basic questions such as: how many (or the rate) of school-aged children are attending school? What alternate activities are available to children? What is the potential for human capital formation of children through alternative extracurricular activities such as child labor and religious education? This study focused on identifying the relevant determinants of participation in different child's activities.

Regarding the relationships among poverty, education, child labor, and other activities, Basu and Van (1998) proposed the "luxury axiom", stating that children only work when their families are unable to meet basic needs, and the "substitution axiom" stating that from an employer's point of view, adult and child labor are interchangeable substitutes. These axioms propose a strong association between child labor and poverty. This association is also supported by several other studies (e.g. Maitra and Ray, 2002; Edmonds, 2005). Glewwe and Jacoby (2004) also found a positive and significant relationship between variation in wealth and the demand for education. That study claims that the wealth effect was valid even after controlling for locality specific factors such as the variability of education returns, availability, quality, and related opportunity costs.

Other studies have contradicted to the above findings, suggesting a more nonlinear relationship among poverty, child labor, and education. Bhalotra and Heady (2003) described a "wealth paradox", stating that children in 'land-rich' households were more likely to engage in labor and less likely to go to school than the children in 'land-poor' households. Likewise, Ray (2000) rejected both the "luxury" and "substitution" axioms in the context of child labor in Pakistan, suggesting that income and related variables did not necessarily have the expected negative effects on child participation assumed by those studies. Swaminathan (1998) found that in Gujarat India, wage employment among children was associated with economic growth, and Kambhampati and Rajan (2006) found similar associations in other Indian states. In rural areas of Burkina Faso, Dumas (2007) found child leisure to be a luxury good and that households did not necessarily require child labor for subsistence needs. These contradictory findings about the interrelationships among poverty,

child labor, and education have given rise to a lengthy debate about the relationships of poverty to child's activities at household level.

Review of Education and child labor in Pakistan

A review of historical literacy performance shows that Pakistan has improved its education profile and that there is still considerable room for progress. Literacy rates in the country identified by the number of people "who could read only" in 1951 was 16 percent. Currently rates are calculated on the basis of those "who are able to read with understanding and can write a short statement" which was 57.7 percent in 2010 (G.O.P., 2011). Comparison of literacy data from Pakistan with India and Bangladesh (Figures 1.1, 1.2 & 1.3 in the appendix), which gained political independence at approximately the same time (Figures 1.4 & 1.5 in the appendix) reveals some interesting differences. From 1950 to 2010, literacy rates in India have increased at higher rates for both men and women than in neighboring countries. In India the gender gap in literacy is also narrowing, despite historical evidence that this gap was formerly greater than in Pakistan. In the case of Pakistan, not only has the gender gap been increasing with the passage of time, but academic performance for both sexes has decreased. Comparison of the literacy rates of Pakistan with Bangladesh, which had a literacy rate of less than 20 percent as recently as 1972 (Brac, 2008), indicates that Bangladesh's performance in terms of overall literacy and gender parity is better than Pakistan's. Looking at the limited progress of Pakistan, it is easy to conclude that this trend will continue, making the achievement of a 100 percent literacy rate target nearly impossible in the coming decades.

Pakistan offers a thought provoking case where the relationship between poverty and child's activities may be more complicated than in many other nations. This complexity demands an in-depth evaluation in order to help develop sustainable solutions to low literacy rates and low levels of human capital formation. In 2005 Pakistan had the third fastest growing economy in the world, and over the last 6 years its average annual growth rate was 6.6 percent (G.O.P., 2008), although Human Development Index (HDI) showed that this growth has failed to improve performance on HDI criteria. In 2003 Pakistan ranked 144th among 175 countries, the last position in the South Asian Region, slipping from the medium level to the low HDI level (Human Development Report, 2003). Therefore Pakistan provides an example of a country which has actually improved GDP growth without achieving corresponding

significant improvements in economic and social development. According to *Education for All*, Global Monitoring Report (2009), the performance of Pakistan in basic education enrollment is below satisfactory and if current trends continue, (there is evidence that the situation is actually getting progressively worse), Pakistan will host the second largest out-of-school population of children after Nigeria by 2015. That report also concluded that in Nigeria and Pakistan, poor governance with respect to education was responsible for limiting progress and keeping millions of children out of school.

In Pakistan, there are two main educational systems: a traditional religious education system and a modern secular school system. The former was the mainstay of education among Muslims of the subcontinent from the thirteenth century until the rise of the British power at the beginning in 1857. The latter refers to the secular school education system introduced by the British colonial government. In the beginning, the secular school education faced resistance from the Muslim population, who felt that it was dissonant with their religious views. Even now after many reforms, there are people who think that modern education rooted in the British system is dissonant with Islamic values.

Some research in Pakistan on participation in child activities such as secular education, religious education, and child labor found that household and community variables are important factors. Hazarika and Bedi (2002) suggested that reduction in education costs would have limited success in the abatement of child labor in rural Pakistan, and also found that child labor external to households and education costs were positively related, whereas internal household child labor was insensitive to changes in education costs. Hazarika (2001) found that in rural areas of Pakistan, distance from primary school was the only statistically significant variable in determining female primary school enrollment, whereas distance from middle school was a statistically significant determinant of male school enrollment. In the case of participation in religious education, Andrabi et al. (2006) explained that in the context of Pakistan prevalent theories associate this phenomenon with household attributes such as preferences for religious education over secular schooling. To the best of our knowledge, research efforts have not focused on the determinants of all possible child's activities on a country-wide basis.

Some early studies from Pakistan and other parts of the world in this research area consolidated child's activities into three categories (education, work, and leisure) without

treatment of alternative activities (Ersado, 2005; Edmonds, 2007; Hou, 2009). This is an inappropriate approach in the context of Pakistan because there are commonly at least 5 potential childhood activity categories; secular schooling, religious education, child labor, combined child labor and school attendance, and inactivity (leisure). Excluding any of these groups or merging them together does not adequately represent the situation in Pakistan. Another distinguishing feature of this study is that it includes unique survey data for children aged 5-14 years on all 5 of these activities.

This paper attempted to help address the following fundamental question: despite the fact that education enhances child productivity, why have decades of free or highly subsidized basic education not achieved the desired literacy rate targets in Pakistan? The main objective in this paper was to find the answer to this question by evaluating socioeconomic factors that affect demand for school education versus alternative activities for school aged children in Pakistan.

For purposes of this study, a unique dataset was collected exclusively from field surveys conducted in parts of four Pakistani provinces. The surveys were conducted in 43 villages from August through December, 2009. 963 heads-of-household were interviewed and data on a total of 2,496 children were collected using a multistage stratified random sampling technique. Site selection was based on population, literacy rates, HDI index, and the geographical area of each province. This data can contribute to related research by shedding light on the dynamic aspects of child's education and alternative activities in Pakistan.

2 The Model

The decision to participate in child's activities is simultaneous in nature. Hence, a simple analytical model presented by Edmonds (2007) was modified and used by this study to analyze the factors affecting this decision making process. Before presenting the model it is worth mentioning that in utility maximizing unitary household models, heterogeneity exists because of differences in household variables (income, education levels, age, and perceptions of school education), individual child variables (age and gender), and community variables (school quality and labor market). The symbols "*hh*", "*ch*", and "*com*" are used to represent household, child, and community variables respectively. For simplicity we

modeled a household with 1 parent, 1 child, and 2 time periods Sº and S∗. The household *i* utility representation is:

$$U(S^o, S_*)$$

where, Sº is the current standard of living of the family with the given household, child, and community (*hh*, *ch*, and *com*) characteristics for a given period of time. The term S∗ represents the future standard of living status of the child subject to the activity decision in the original period Sº. The decision of the parents regarding child's activities, on which the future living standard of the child will depend, is influenced by the *hh*, *ch*, and *com* variables. Edmonds (2007) considered four child's activities: education, leisure and play, work outside the household, and work inside the household. In the context of Pakistan and according to the requirements of this study, five activities are considered: secular school attendance (S_e), religious education (R_e), engagement in child labor (C_l), combined child labor and secular school attendance (W_s), and inactivity (S_{in}). Parents are responsible for the decision of which of these child's activities a child will participate in. For further simplification, the model can be formulated as:

$$S_e + R_e + C_l + W_{s,} + S_{in} = 1$$

Edmonds (2007) named the fifth category as leisure and play; in the context of this study we label this as "inactivity", meaning that compared to the other four categories they are not involved in a productive activity. In some cases children may be neglected because of their social or economic status. Although, due to poverty the inactivity may not be the actively chosen 'activity' by the parent, however may be the defacto choice and parent are forced to adopt due to economic or other constraints.

Another difference with the model presented by Edmonds is that in this modified model, in order to simplify it, we merged wage and non-wage child labor in to one category. Therefore, five child activities (secular education, religious education[1], child labor, combined

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[1] When a child is enrolled full-time in a religious institution, but not if he/she goes for some time to study religious education.

child labor and secular school attendance, and inactivity) are the basis of the theoretical framework and empirical analysis of the study.

Utility maximization strategy of the head of household with given constrains in the period S_o will provide a relevant theoretical frame work to fulfill the needs of this study. By adding 1 more category in the context of Pakistan, this model should be able to explain the determinants of demand for secular education and alternative activities, with a given set of independent variables that describe household, child, and community characteristics.

The current standard of living of each household S^0 can be captured by a linear homogenous production function that depends on current consumption c, and input of the child to the household T.

$$S^0 = f(c, T)$$

The standard of living of the child in the next generation will depend on the degree of human capital formation in the current period. Human capital formation will depend on the amount of time spent in formal education versus alternative activities, and is positively related with secular education. The child welfare production function can be specified as follows:

$$S_* = f(S_e)$$

When a child participates in secular education, in addition to direct costs there are also opportunity costs and inherent time constraints. The opportunity cost of education is the remuneration that a child foregoes while attending either a secular school or a *madrassa*[2] for religious education. The cost of schooling denoted by eS_e is the forgone consumption by the household in the period S^0. In contrast, if the child is working, this will enhance household consumption by wC_l, in the period S^0. With the given income of Y, the consumption function of the household is given by:

$$c = Y + wC_l - eS_e$$

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[2] Religious educational institutions locally called Madrassa.

Where w is the wage rate? And the household standard of living is given by $S^{\underline{o}} = f(c, T)$, the overall consumption of the household in the current time period $S^{\underline{o}}$ with the time input of available child is given by:

$$S^{\underline{o}} = f[(Y + wC_l - eS_e), T]$$

In this situation, parents will choose an activity for their child depending on the marginal utility of each alternative activity. The parent's utility maximization equation is given by:

Max $U(S^{\circ}, S_*)$ = Max $U_{Se, Re, Cl, Ws, Sin}$ $[S(Y + wC_l - eS_e, T), S_*(S_e)]$

Subject to:

$S_e + R_e + C_l + W_{s,} + S_{in} = 1$ and $S_e \geq 0$ $R_e \geq 0$ $C_l \geq 0$ $W_{s,} \geq 0$ $S_{in} \geq 0$

If a child goes to school:

$$Se = 1 = \frac{\partial U}{\partial S^*}\frac{\partial S^*}{\partial Se} \geq \vartheta + \frac{\partial U}{\partial S}\frac{\partial S}{\partial C}e$$

In this case, parent's marginal utility from the foregone consumption as a result of schooling costs and marginal utility of the time ϑ is at least less than the parent's marginal utility gained through human capital formation of their child from an additional year of secular school education.

If a child participates in religious education:

$$Re = 1 = \frac{\partial U}{\partial S^*}\frac{\partial S^*}{\partial Re} \geq \vartheta + \frac{\partial U}{\partial S}\frac{\partial S}{\partial C}e$$

If a child is engaged in child labor:

$$Cl = 1 = \frac{\partial U}{\partial S^*}\frac{\partial S^*}{\partial Se} \leq \vartheta + \frac{\partial U}{\partial S}\frac{\partial S}{\partial C}e$$

If a child is engaged in labor and attending secular school:

$$Ws = 1 = \frac{\partial U}{\partial S^*}\frac{\partial S^*}{\partial Ws} \geq \vartheta + \frac{\partial U}{\partial S}\frac{\partial S}{\partial C}e$$

If a child is inactive:

$$Sin = 1 = \frac{\partial U}{\partial S^*}\frac{\partial S^*}{\partial Sin} \geq \vartheta + \frac{\partial U}{\partial S}\frac{\partial S}{\partial C}e$$

Marginal utilities of schooling and alternative activities depend on a vector of different factors that can be separated into three groups; household, child, and community variables. Thus, the structural form of the equation is specified as follows:

$$Y_{Se, Re, Cl, Ws, Sin} = f(hh, ch, com)$$

The detail description of the selected household, child, and community variables used in this study are given in the Table 1.1. The empirical analyses in this paper were based on the childhood activity choice equation stated above. Along with descriptive analysis, a multinomial probit (MNP) model was also used to capture all possible child's activities at the same time and analyze the relationship of child's activities (response variables) with the explanatory variables.

We had two reasons for the choice of MNP from the family of models which can be used for the discreet choice models analysis. First, the decision of childhood activity is simultaneous; one needs a multinomial model to explain the determinants of the childhood activity. Second, MNP does not impose the independence of irrelevant alternatives (IIA) assumption (Greene, 2003). The IIA property imposes the restriction that the relative odds of selecting between any two activities should be independent of the number of alternatives. However in reality this is not the case regarding the choice of childhood activity. For example, if there is a legal ban on child labor, then the relative odds of choosing religious education, secular schooling, or inactivity will change. In the same way, a legal ban on religious education or other activity would also influence the relative odds of choosing alternatives.

Table 1.1 Details of the variables

Des.	No.	Variable	Details
Dependent	1.	**Child activity**	1 = secular school attendance 2 = religious education 3 = child labor 4 = working and attending school 5 = inactivity
Household variables	2.	**lndpcainc**	Log value of daily per-capita household income
	3.	**hhhedu**	Years of formal education successfully completed by the head of household
	4.	**hhhage**	Age of the head of household
	5.	**FIP (categorical)**	Future income perception of the head of household 1 = disagree 2 = ambivalent 3 = agree
	6.	**RCP (categorical)**	Religious compatibility perception of the head of household 1 = dissonant 2 = ambivalent 3 = compatible
	7.	**rmdecm (dummy)**	Role of child's mother in decision making; 1 = if mother has a role in decision making
Ch. var	8.	**chage**	Age of the child
	9.	**chgend (dummy)**	Gender of the child; 1 = if child is a female
Community variables	10.	**resgap**	Average annual rest gap between nearest public and private schools
	11.	**disdistcap**	Distance from the district capital
	12.	**rural (dummy)**	Location of the area; 1 = for rural areas

These relationships were also confirmed by the results of a Hausman Specification test. Due to the facts that childhood activity is a behavioral outcome and that behavioral phenomena sometimes violate IIA assumptions, multinomial logistic estimations are suspect (Dow and James, 2004). Arguably MNP should be the benchmark methodology in the study of child's activities such as education and other alternatives.

The model becomes:

$$\Pr(childactivity = j) = \int_{-\infty}^{\beta x_1} .... \int_{-\infty}^{\beta x_{j-1}} f\left(e_{i1,}........,e_{ij-1}\right)de_{i1}.........,e_{ij-1}$$

Where j = 1 is attending secular school, j = 2 is religious education, j = 3 is child labor, j = 4 is the combination of secular school attendance and child labor, and j = 5 is inactivity.

Moreover X is a vector of the factors (household [*hh*], child [*ch*], and community [*com*]) influencing the parent's decision of childhood activity options and *i* = 1……….n.

3 Description of the variables

Table 1.1 shows details of the variables selected for analysis. The selection of variables was based on relevant theory and comparison of post analysis estimation (AIC [Akaike Information Criterion] and BIC [Bayesian Information Criterion]) values for alternative models. A summary of the descriptive statistics for these variables is included in Table 1.9 in the appendix.

4 Results and Discussion

4.1 Descriptive Analysis

Prior to the econometric analysis, descriptive analyses were used to observe relationships of child activities with response variables of different occurrences in child gender, household income, head-of-household education, perception of school education, and demographic category.

4.1.1 Child's activities

In order to describe the discrepancy of child's activities among relevant variables, the data was disaggregated by age, gender of the child and on the basis of urban versus rural settings. On the basis of age, children were divided into two age groups, ages 5-9 and ages 10-14. The data summary provided in Table 1.2 show that the larger gap between school enrollment rates for male and girls in the both age groups was associated with a rural setting.

In the "secular school attendance" category, enrollment rates for female children are slightly higher than those of male children in urban areas. The percentage of children attending *madrassa* for religious education is higher for both male children and female children in rural areas, particularly for the 5-9 age groups. In the "child labor" category, the rates are higher among female children, most of who were engaged as non-paid family workers. This is especially true for the 10-14 age groups in rural areas. In the "combined child labor with secular school attendance" category, the rates of male students are higher than female students, with slightly higher levels in rural areas. For the "inactivity" category rates for both genders were higher in the 5-9 age groups and in rural areas.

Table 1.2 Summary of child's activities survey data by age, gender, and demography

Child activity	Urban						Rural					
	Male			Female			Male			Female		
	Age 5-14	Age 5-9	Age 10-14	Age 5-14	Age 5-9	Age 10-14	Age 5-14	Age 5-9	Age 10-14	Age 5-14	Age 5-9	Age 10-14
Secular school attendance	(73.61) 343	(83.11) 182	(65.18) 161	(73.95) 335	(80.90) 144	(69.45) 191	(50.90) 451	(59.64) 232	(44.06) 219	(41.82) 289	(54.45) 159	(32.58) 130
Religious education	(9.23) 43	(10.05) 22	(8.50) 21	(8.00) 33	(6.18) 17	(8.99) 16	(16.67) 165	(25.40) 107	(10.12) 58	(16.79) 116	(25.00) 73	(10.78) 43
Child labor (either for employer or self-employed)	(6.44) 30	(2.28) 5	(10.12) 25	(14.35) 65	(6.18) 11	(19.64) 54	(11.96) 106	(3. 60) 14	(18.51) 92	(33.57) 232	(11.30) 33	(49.87) 199
Working and attending school	(8.58) 40	(0.46) 1	(15.79) 39	(2.87) 13	(0.00) 0	(4.73) 13	(15.12) 134	(2.57) 10	(24.95) 124	(4.05) 28	(0.34) 1	(6.77) 27
Inactivity	(2.15) 10	(4.11) 9	(0.40) 1	(1.55) 7	(3.93) 7	(0.00) 0	(3.39) 30	(6. 68) 26	(0.80) 4	(3.76) 26	(8.90) 26	(0.00) 0
Total	(100) 466	(100) 219	(100) 247	(100) 453	(100) 178	(100) 275	(100) 886	(100) 389	(100) 497	(100) 691	(100) 292	(100) 399

Source: survey data 2009

Note: Numbers in parentheses are percentage values

4.1.2   *Child's activities versus household income*

For the descriptive analysis of the relationship between household daily per-capita income and child's activities, income was divided into six categories -Y_1 to Y_6 - in consecutive order. Hence Y_1 and Y_6 represent households with daily per-capita income of less than 0.50 \$ and more than 1.75 \$ respectively. The data summary in Table 1.3 shows the relationship between childhood activity choice and household per-capita income. The rates of school attendance increased along with per-capita household income from 27.57 to 77.01 percent from Y_1 and Y_6. Religious education rates decreased as income increased, except in the highest income group where they rose again. The incidence of child labor decreased with increases in per-capita household income from 28.15 percent in the lowest income category to 6.47 percent in the highest. The rates for combined child labor and school attendance also declined as per-capita household income increased, reaching only 3 percent in the highest income group Y_6. The highest rates of inactive children were in the lowest income group, and also decreased with increased income.

Table 1.3 Child's activities and daily per-capita household income.

Child activity	Household per-capita income in US \$						
	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Total
Secular school attendance	(27.57)	(44.33)	(58.11)	(65.55)	(71.43)	(77.01)	(56.81)
	94	262	258	234	225	345	1,418
Religious education	(19.65)	(16.75)	(14.64)	(10.36)	(9.21)	(13.39)	(14.30)
	67	99	65	37	29	60	357
Child labor (either for employer or self-employed)	(28.15)	(23.18)	(16.22)	(15.69)	(13.65)	(6.47)	(17.35)
	96	137	72	56	43	29	433
Working and attending school	(13.78)	(11.34)	(10.36)	(6.72)	(5.71)	(2.90)	(8.61)
	47	67	46	24	18	13	215
Inactivity	(10.85)	(4.40)	(0.68)	(1.68)	(0.00)	(0.22)	(2.92)
	37	26	3	6	0	1	73
Total	(100)	(100)	(100)	(100)	(100)	(100)	(100)
	343	591	442	357	315	448	2,496

Source: survey data 2009

Note: Numbers in parentheses are percentage values

Y_1, Y_2, Y_3, Y_4, Y_5, and Y_6 denote incomes levels (in \$) when household per-capita income is (< 0.5), (≥ 0.5 & < 0 .75), (≥ 0.75 & < 1.00), (≥ 1.00 & < 1.25), (≥ 1.25 & < 1.75), and (>1.75) respectively

Amounts in US dollars (US \$ @ Rs. 80.85)

4.1.3   *Child's activities versus head-of-household education*

For the comparison of child's activities with education levels, education is divided into 7 levels based on the number of years of successfully completed secular education by the head-of-household. The labels and criteria for each of the seven education levels are explained below the table. Table 1.4 shows the results of a bivariate analysis of the child's activities and head-of-household education level. There is a clear positive relationship between rates of secular school attendance and increased education levels. All other child's activities such as religious education, child labor, working and attending school, and inactivity exhibited a negative relationship with increased head-of-household education. More detailed parametric analyses were needed to gain insight from the data that would offer concrete conclusions useful for the consideration of effective policy measures.

Table 1.4 Child's activities and head-of-household education

Child activity	Unedu-cated	Primary	Middle	Metric	Inter-mediate	Bachelor	Above Bachelor
Secular school attendance	(17.48) 158	(52.98) 178	(68.05) 115	(84.70) 382	(88.84) 199	(94.04) 221	(93.22) 165
Religious education	(24.67) 223	(12.50) 42	(15.98) 27	(6.43) 29	(7.59) 17	(5.11) 12	(3.95) 7
Child labor (either for employer or self-employed)	(35.18) 318	(21.43) 72	(8.28) 14	(5.32) 24	(1.34) 3	(0.43) 1	(0.56) 1
Working and attending school	(15.49) 140	(11.61) 39	(7.69) 13	(2.88) 13	(2.23) 5	(0.43) 1	(2.26) 4
Inactivity	(7.19) 65	(1.49) 5	(0.00) 0	(0.67) 3	(0.00) 0	(0.00) 0	(0.00) 0
Total	(100) 904	(100) 336	(100) 169	(100) 451	(100) 224	(100) 235	(100) 177

Source: survey data 2009

Note: Numbers in parentheses are percentage values

Uneducated = when head of household's years of successful school education is 0
Primary = when head of household's years of successful school education are > 0 and ≤ 5
Middle = when head of household's years of successful school education are > 5 and ≤ 8
Metric = when head of household's years of successful school education are > 8 and ≤ 10
Intermediate = when head of household's years of successful school education are > 10 and ≤ 12
Bachelor = when head of household's years of successful school education are > 12 and ≤ 14
Above Bachelor = when head of household's years of successful school education are 14 or more

4.1.4 Child's activities and head-of-household perceptions of school education

Parental perception regarding school education was measured by asking closed-ended questions about what impacts parents expected school education to have on the child's future earnings (Future Income Perception [FIP]) and of the compatibility of school education with religious values (Religious Compatibility Perception [RCP]). FIP was measured by responses to questions such as: "Do you think that acquiring a school education will ensure greater future income for your child as compared to all other available alternatives?" RCP was measured by responses to questions like: "Do you think school education is compatible with your religious values?" Each column includes the children participating in each activity from households that are either disagreeing, ambivalent, or agree with the survey question. Table 1.5 includes a summary of children participating in each activity based on columns representing the parental responses to the survey questions.

The results indicate distinct trends in child's activities based on parents FIP and RCP. According to the theory of human capital, the choice of levels of education depends on returns on investment (Becker, 1964). Parents will only send their children to school as long as they expect a future gain from this investment. Survey results for FIP show that 40.67 and 30.13 percent of the children of parents who did not agree that secular education would have a positive effect on future income, engaged in child labor and religious education respectively. In households that agreed that secular education has a positive effect on future income, 92.10 percent of the children attended school.

Approximately 30 percent of the children were from households that viewed secular education as inconsistent with their faith, 20 percent were from households with an ambivalent opinion, and 50 percent from households that perceived secular education as consistent with their faith. The results show that 46 percent of the children from households that disagreed that secular education is consistent with faith were sent to *madrassah*, as were 15.84 percent of the children of parents who thought that school education is neither dissonant nor compatible with their religious faith. On the other hand, 86 percent of children from households that perceived that secular education is consistent with their faith were attending school.

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Table 1.5 Child's activities and head-of-household perception of school education regarding future income and religious compatibility

Childhood activity	Future income perception (FIP)			Religious compatibility perception (RCP)		
	dis-agree	ambiva-lent	agree	disso-nant	ambiva-lent	compat-ible
Secular school attendance	(9.73) 73	(40.00) 202	(92.10) 1143	(12.24) 53	(42.35) 393	(85.64) 972
Religious education	(30.13) 226	(20.00) 101	(2.42) 30	(45.96) 201	(15.84) 147	(0.97) 11
Child labor (either for employer or self-employed)	(40.67) 305	(22.57) 114	(1.13) 14	(27.25) 118	(27.69) 257	(5.11) 58
Working and attending school	(11.33) 85	(15.45) 78	(4.19) 52	(10.39) 45	(9.59) 89	(7.14) 81
Inactivity	(8.13) 60	(1.98) 10	(0.16) 2	(4.16) 18	(4.53) 42	(1.15) 13
Total	(100) 750	(100) 505	(100) 1241	(100) 433	(100) 928	(100) 1135

Source: survey data 2009

Note: Numbers in parentheses are percentage values of children participating in each activity from households that disagree, are ambivalent, or agree with the survey question

4.1.5   *Justification of childhood activity selection*

Results presented in this subsection are organized according to the responses to open-ended questions regarding the head-of-household's reasons for choosing particular child's activities. Responses were grouped according to three broad categories; gender issues, religious and institutional issues, and pecuniary issues. Table 1.6 includes the descriptive summary of reasons given by the head-of-household for activity choices. Among households that chose to have their daughters attend secular school, 21.96 percent did so because the school was located near home and 25.64 percent did so because classes were taught by women. In Pakistan female children of high school age observe *purdha*[3] and have restricted mobility, especially in rural areas (Khan, 2000; Sathar et al., 2003). Thus, the presence of girl schools nearby and qualified female teachers in the school were considered gender issues important to the decision to have daughters attend secular school, similar to the findings of Hou (2009) and Hazarika (2001). On religious and institutional issues, it is evident that 39.55 percent of male children and 22.12 percent off male children attending school were in

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[3] Requirement for women to cover their bodies and conceal their form

private schools because their parents were not satisfied with the educational services of public schools. With regard to pecuniary issues, 47.60 percent of the male children and 30.29 percent of male children attending school had parents that identified they were unable to afford the cost of private schools. The data summary indicates that more boy children were given the opportunity to participate in secular education than girl children in the study area.

In the case of children participating in religious education, 14.77 percent of the male children came from households that believed that secular school education is not appropriate for female children. The most commonly cited reason for sending children to *madrassah* in households with both boy students (58.65%) and girl students (42.95%) was because of the lack of religious education in secular schools. Only 15.38 percent of the male children and 8.72 percent of male children participating in religious education had parents who believed that the quality of education in secular schools was poor in their area. Among those in religious education 26.17 percent of the female children and 9.13 percent of the male children had parents who considered this type of education important for their children. On pecuniary issues, almost 16 percent of the male children and 3.37 percent of female children attending religious school came from households that could not afford public and private schools.

The descriptive summary for child labor shows that most households (92%) that chose this activity for female children did so because of gender issues while only 7.41 and 1.34 percent made this decision because of institutional or pecuniary issues respectively. Most of the male children (62.5%) that engaged in child labor came from households that cited pecuniary issues for this decision, followed by 37.50 percent based on institutional issues. Most of the female children were engaged in child labor.

Among children that both worked and attended secular school, most of the male children (97.42%) and female children (70.73%) came from households that identified pecuniary issues for that decision. This supports the perception that child labor is associated with income level.

Among inactive children, 33.33 percent of female children and 12.50 percent of male children came from households that cited gender and institutional issues respectively for

that decision. For the rest of the children, pecuniary issues were indicated as the reason for choosing inactivity.

Table 1.6 Reasons given by the head-of-household for the selected activities of their children

Reason for the choice of the child activity		Secular school attendance		Religious education		Working		Working & Schooling		Inactivity	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Gender Issues	Close to home	(8.19)	(21.96)	(0.96)	(3.36)	(0.00)	(0.00)	(0.00)	(7.32)	(0.00)	(0.00)
		65	137	2	5	0	0	0	3	0	0
	Female teachers	(2.39)	(25.64)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		19	160	0	0	0	0	0	0	0	0
	Male teachers	(2.01)	(0.00)	(0.00)	(2.68)	(0.00)	(1.01)	(0.00)	(0.00)	(0.00)	(0.00)
		16	0	0	4	0	3	0	0	0	0
	Learning house work important for female children	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(68.64)	(0.00)	(21.95)	(0.00)	(0.00)
		0	0	0	0	0	204	0	9	0	0
	Schooling is not good for female children	(0.00)	(0.00)	(0.00)	(14.77)	(0.00)	(21.55)	(0.00)	(0.00)	(0.00)	(33.33)
		0	0	0	22	0	64	0	0	0	11
Religious and Institutional Issues	High quality of education (in private schools)	(39.55)	(22.12)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		314	138	0	0	0	0	0	0	0	0
	Low quality of schooling in the area	(0.00)	(0.00)	(15.38)	(8.72)	(37.50)	(7.41)	(0.00)	(0.00)	(0.00)	(0.00)
		0	0	32	13	51	22	0	0	0	0
	No religious education in schools	(0.00)	(0.00)	(58.65)	(42.95)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		0	0	122	64	0	0	0	0	0	0
	Religious education is important for the child	(0.00)	(0.00)	(9.13)	(26.17)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
		0	0	19	39	0	0	0	0	0	0
Pecuniary Issues	Can't afford public schools	(0.00)	(0.00)	(12.50)	(1.34)	(8.82)	(0.00)	(0.00)	(0.00)	(75.00)	(42.42)
		0	0	26	2	12	0	0	0	30	14
	Can't afford private schools	(47.60)	(30.29)	(3.37)	(0.00)	(2.94)	(0.00)	(0.00)	(7.32)	(10.00)	(3.03)
		378	189	7	0	4	0	0	3	4	1
	Earning money is important for the family	(0.00)	(0.00)	(0.00)	(0.00)	(13.24)	(0.34)	(28.16)	(29.27)	(0.00)	(0.00)
		0	0	0	0	18	1	49	12	0	0
	To support his/her school expenditures	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(18.97)	(21.95)	(0.00)	(0.00)
		0	0	0	0	0	0	33	9	0	0
	Working in his own business/farm	(0.00)	(0.00)	(0.00)	(0.00)	(37.50)	(0.00)	(50.57)	(12.19)	(0.00)	(0.00)
		0	0	0	0	51	0	88	5	0	0
	Others	(0.25)	(0.00)	(0.00)	(0.00)	(0.00)	(1.01)	(2.58)	(0.00)	(15.00)	(21.21)
		2	0	0	0	0	3	4	0	6	7
	Total	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
		794	624	208	149	136	297	174	41	40	33

Source: Survey data 2009   Note: Numbers in parentheses are percentage values

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4.2   Multinomial Probit Model results

In this part of the analysis, the outcome measure was the probability of the chosen childhood activity and the relationship of that choice to household, child, and community variables. The MNP estimates of the determinants of household choice of childhood activity are presented in Table 1.7. The category of secular school attendance was omitted because it is the base outcome with which the probabilities of estimated coefficients of the other activities are compared. The choice of omitted category does not change the basic results; it only changes the basis of reference for the interpretation of results.

The MNP model coefficients express the amount of change in the z-score or probit index for each unit of change in the predictor. The sign of each coefficient describes the effect of each variable on participation in that activity relative to the base outcome of attending secular schooling. The daily per-capita income results show that income played a statistically significant role for inactivity, working and attending school, and child labor. Hence, an increase in the daily per-capita income of the household decreased the probability of participation in these three activities as compared to secular schooling. Apart from participation in religious education, all other activities have estimated coefficients that are statistically significant, with higher negative coefficient values for inactivity, followed by working and secular school attendance, and child labor.

Results also show that the education level of the head-of-household played an important role in enhancing the probability that children attend secular school. An increase in head-of-household education decreased the probability of participation in the other activities. The significant and positive coefficients for the age of the head-of-household indicate that older parents were more likely to choose activities other than attending secular school. The head-of-household's age effect was not statistically significant with regard to child labor. For FIP, the response disagree was used as the reference category (among the 3 options of disagree, ambivalent, and agree). For both perceptions the results could be explained by dummy variables. In the first row of FIP perception, the results compared are for disagree versus ambivalent, whereas in the second row of FIP disagree is compared with agreeing. Statistically significant FIP results show that any positive change (from disagreement to agreement) in this perception would decrease the probability of a child participating in

alternatives to secular school attendance. A comparison of the coefficients for alternative activities shows that these effects were greater for child labor, followed by inactivity and religious education.

Table 1.7 Multinomial probit coefficient estimates of childhood activity choices

Covariates	Religious education	Child labor	Working & schooling	Inactivity
Log value of daily per-capita household income (measured in Pak. rupee)	-.060 (0.121)	-.212* (0.117)	-.452*** (.120)	-1.024*** (.221)
Years of school education successfully completed by head-of-household	-.037* (.015)	-.157*** (.017)	-.150*** (.016)	-.169*** (.036)
Age of head-of-household	.016* (.007)	.007 (.007)	.015* (.007)	.021* (.010)
Perception regarding impact of schooling on future earnings of a child - FIP (disagree vs ambivalent)	-.756*** (.156)	-1.099*** (.159)	-.404* (.175)	-1.50*** (.247)
Perception regarding impact of schooling on future earnings of a child - FIP (disagree vs agree)	-2.211*** (.197)	-3.351*** (.250)	-1.594*** (.217)	-2.608*** (.377)
Perception on compatibility of school education with religious values - RCP (dissonant vs ambivalent)	-1.028*** (.157)	-.013 (.173)	.202 (.194)	.203 (.238)
Perception on compatibility of school education with religious values - RCP (dissonant vs compatible)	-2.599*** (.234)	-.495* (.220)	.186 (.226)	.025 (.296)
Role of mother of child in household decision making (rmdecm = 1 when mother as a role in decision making and 0, if otherwise)	-.264 (.168)	-.731*** (.198)	-.406* (.176)	-.836* (.383)
Child age	-.029 (.028)	.397*** (.031)	.440*** (.031)	-.229*** (.047)
Gender of child (chgend = 1 when child is female and 0, otherwise)	.669*** (.132)	1.726*** (.137)	-.182 (.145)	.812*** (.205)
Average annual performance gap between local public and private schools	.041*** (.011)	.024* (.011)	.043*** (.012)	-.014 (.016)
Distance from district capital	-.010*** (.002)	-.005** (.002)	-.006** (.002)	.006** (.002)
(Rural) dummy for location	.601*** (.181)	.675*** (.190)	.521** (.185)	.111 (.290)

< 0.1*, < 0.05**, and < 0.01***
Sources: survey data 2009
Note: The response variable "secular school attendance" is the base outcome category
　　　Numbers in parentheses are robust standard errors

In the case of RCP, dissonant was selected as the reference category. Similarly in the first row of RCP results the comparison is between dissonant versus ambivalent, and in the second row dissonant versus compatible. The RCP results show that the perception of

consistency between secular schooling and faith would decrease the probability of participation in religious education. The magnitude and significance levels of the estimated coefficients illustrate that the probability of choosing participation in religious education for their children was associated by the perception that school education is dissonant with religious values.

Survey results regarding the active participation of mothers in household decision making processes show that this factor had a negative effect on the probability of selecting any of the non-secular school activity options.

Multinomial probit estimates for child age show that as age increases, so does the probability of choosing to engage in child labor and combined work and school attendance. These results are consistent with national and international reports on education in Pakistan that found that secular school dropout rates increase with a child's age (see Andrabi et al 2006; LEAPS[4] 2008; and UNESCO 2009). Most drop outs leave school before completing basic levels of education. With regard to religious education and inactivity, increases in the child's age had negative effects on the probability of choosing either of these activities. As children grow older, they often start working at home in non-wage child labor. This is especially true for the female children. These findings are in step with those of (Aslam 2009) as she reports that powerful social and cultural (demand-side) factors such as conservatism of attitudes toward women's education and their labor market work-as well as supply-side constraints limit female children' access to schools.

From the results on gender, being a girl significantly increased the probability of choosing child labor, followed by inactivity, and religious education. Female gender had a negative effect on the probability of engaging in combined work and secular schooling that was not statistically significant. These results are consistent with the findings of Hou (2009) that female children in Pakistan were more likely to be exploited as child workers at home.

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[4] Learning and Educational Achievement in Punjab Schools, a World Bank project with collaboration of Pomona College, Harvard University, and Government of Punjab, started in 2001

Positive and statistically significant results show that an increase in the performance gap between public and private schools increased the probability of participation in religious education, working and attending school, and child labor. There was not a statistically significant relationship between public versus private school performance gap and inactivity.

The effects of location on the selection of child's activities were measured by two variables, the distance from the district capital and whether households were located in an urban or rural area. Increased distance from the capital has a statistically significant but small negative effect on the probability on participating in religious education, child labor, and combined work and schooling, and a significant but small positive effect on the probability of inactivity. The location of the household in a rural setting had negative effects on all non-secular school attendance child's activities, which were statistically significant for religious education, child labor, and combined work and schooling.

4.2.1   *Marginal effects on activity selection*

Table 1.8 includes the results of the marginal effect of explanatory variables on the probability of selected child's activities. Results indicate that an additional percentage in daily per-capita income increased the probability of attending secular school by 0.033, while lowering the probability of other activities such as working in combination with secular schooling and inactivity by 0.027 and 0.028 respectively, when the other variables remain constant. Results for the marginal effects on the selection of alternatives to the secular education with respect to daily per-capita household income show that increased income were associated with increased secular school enrollment, and decreased combined working and secular schooling and inactivity. Increased income was not statistically significant to the selection of activities such as religious education and child labor. In the case of religious education, the coefficient is not statistically significant, providing weak support to the hypothesis that "only children in poor households enroll for religious education" (Singer, 2001). This is consistent with the conclusions of Andrabi et al., (2006) that at an aggregate level there is little difference between poor and rich households in the choice of religious education. These outcomes suggest that the category of childhood inactivity is associated with extreme poverty whereas there are fewer indications that poverty is the main reason for not sending children to school. There are also indications that, compared to "child labor,"

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the category of "combined work and secular schooling" decisions were related to the financial status of households that believe that schooling is better for their child's future productivities. These findings support the broader definition of child labor used in this study, and there was little evidence from the survey to support the "luxury axiom" hypothesis that children only work when their families are unable to meet their basic needs (Basu and Van de Walle, 1998).

The findings pertaining to child's activities in relation to the level of education of heads-of-household revealed several insights. Keeping all other variables constant, an additional year of secular school education successfully completed by the head-of-household increased the probability of selecting both secular schooling and religious education enrollments by 0.012 and 0.006 respectively. Increased head-of household education also decreased the probability of choosing child labor, combined work and secular schooling, and inactivity by 0.009, 0.007, and 0.003 respectively. Looking at these findings, it appears that a head-of-household's school education has a greater impact on the selection of child's activities than income. These findings are in-line with the conclusions of Duryea and Kuenning (2003), who found that increasing the education of the head-of-household by two additional years had a greater effect on education and employment outcomes of children than a 20 percent increase in state wages or family income.

The FIP results show that improvement of the perception of the head-of-household had an inverse relationship with activities such as child labor, combined work and secular schooling, and inactivity. Keeping other variables constant, the probability of a child going to secular school increases by 0.428 if the head-of-household agreed that secular school education will increase the future financial productivity of that child. This perception decreased the probability of selecting activities such as religious education, child labor, combined work and secular schooling, and inactivity by 0.131, 0.244, 0.01, and 0.043, respectively.

These findings indicate the perception that secular school education is compatible with religious values, decreased participation in religious education. Keeping other variables constant, if the head-of-household holds this perception of compatibility with religious values, the probability of selecting religious education decreases by 0.302, compared to those who perceived that school education is dissonant with religious values.

If the mother of a child has a role in household decision making, the study findings indicate that while keeping other variables constant, the probability of a child attending secular school increased by 0.053 compared to households where mothers were not reported to have a significant role in decision making. Maternal decision making also decreased the probability of participating in child labor by 0.047.

Results pertaining to a child's age and participation in child's activities also revealed statistically significant results. Keeping other variables constant, one additional year in the age of a child decreased the probability of attending secular school, religious education, and inactivity by 0.022, 0.023, and 0.012 respectively. Increased age of a child was also associated with increases in the probability of child labor and combined work and secular school attendance by 0.031 and 0.026 respectively.

The study results for the influence of the gender of a child show statistically significant results for secular school attendance, child labor, and combined work and secular school attendance. Keeping other variables constant, girls have 0.077 and 0.082 less probability respectively, of secular school attendance and combined work and secular school attendance compared to their male counterparts. In the case of child labor, the girls had a 0.154 higher probability of engaging in child labor compared to their male counterparts.

Performance gaps between public and private schools contributed to the probability of choosing child labor and overall lower demand for secular school education. The study results are consistent with other reports that the quality of the public school education is deteriorating in Pakistan, as compared to private school education. Study results illustrate that keeping other variables constant, an additional unit increase in the performance gap (a decrease in the quality of public schools compared with the private schools or increase in the quality of private schools compared to public schools) decreased the probability of secular school attendance by 0.004. Keeping other variables constant, each 1 additional unit in performance gap increased the probability of combined working and secular school attendance and religious education by 0.003 and 0.002, respectively. Increased performance gaps are also associated with a decline in secular school enrollment and increased participation in religious education and combined work and secular school attendance.

One unexpected result of the performance gap between public and private schools was an associated decrease of inactivity by 0.001, although this association was not statistically significant when compared to secular school attendance as the base outcome (Table 1.7). The probability decrease of inactivity is statistically significant when participation in religious education is used as the base outcome category (see Table 1.10 in the appendix). This suggests that decreased probability of inactivity was due to increase in school performance related to the increase in participation in religious education.

Table 1.8 Marginal effects on the probability of selected childhood activity with respect to explanatory variables

Particulars	Secular School	Religious education	Child labor	Working & schooling	Inactivity
Log value of daily per-capita income (measured in Pak. rupee)	0.033*** (0.011)	0.0198 (0.011)	0.003 (0.009)	-0.027*** (0.009)	-0.028*** (0.007)
Years of school education successfully completed by head of household	0.012*** (0.001)	0.006*** (0.001)	-0.009*** (0.001)	-0.007*** (0.001)	-0.003** (0.001)
Age of head-of-household	-0.002* (0.001)	0.001 (0.001)	0.001 (0.0006)	0.0007 (0.0005)	0.0004 (0.0003)
Perception regarding impact of schooling on future earnings of a child - FIP (disagree vs. ambivalent)	0.155*** (0.026)	-0.038* (0.02)	0.106*** (0.020)	0.025 (0.015)	-0.036*** (0.0098)
Perception regarding impact of schooling on future earnings of a child - FIP (disagree vs. agree)	0.428*** (0.034)	-0.131*** (0.024)	-0.244*** (0.023)	-0.01*** (0.445)	-0.043*** (0.0098)
Perception on compatibility of school education with religious values - RCP (dissonant vs. ambivalent)	0.106*** (0.025)	-0.186*** (0.026)	0.055*** (0.013)	0.006 (0.011)	0.019*** (0.006)
Perception on compatibility of school education with religious values - RCP (dissonant vs. compatible)	0.174*** (0.029)	-0.302*** (0.027)	-0.018 (0.018)	0.082*** (0.018)	0.029** (0.953)
Role of mother of child in household decision making (rmdecm = 1 when mother has role in decision making and 0 if otherwise)	0.053*** (0.015)	0.015 (0.016)	-0.047* (0.019)	-0.005 (0.014)	-0.016 (0.011)
Child age	-0.022*** (0.002)	-0.023*** (0.002)	0.031*** (0.002)	0.026*** (0.002)	-0.012*** (0.001)
Gender of child (chgend = 1 when child is female and 0 otherwise)	-0.077*** (0.011)	0.0007 (0.0107)	0.154*** (0.009)	-0.082*** (0.01)	0.004 (0.005)
Average annual performance gap between local public and private schools	-0.004*** (0.001)	0.003*** (0.001)	-0.0003 (0.0009)	0.002** (0.001)	-0.0012** (0.0005)
Distance from district capital	.0007*** (0.0002)	-0.0008*** (0.0001)	-0.00002 (0.000)	-0.0002 (0.0001)	0.0004*** (0.00006)
(Rural) dummy for location	-0.063*** (0.016)	0.0301* (0.017)	0.031* (0.169)	0.013 (0.014)	-0.0104 (0.008)

< 0.1*, < 0.05**, and < 0.01***

Sources: survey data 2009

Note: Numbers in brackets are robust standard errors

Public and private education partnerships might be beneficial if there is a productive competition regarding the performance of educational institutions. The load sharing policy of a public and private partnership may reduce the educational gap between household income levels. This premise is also supported by the findings of "Learning and Educational Achievement in Pakistan Schools" (LEAPS, 2008). That report explained that children in the public schools performed significantly below curricular standards for common subjects and concepts at their grade-level when compared to private school students. That report also described finding both high and low performing schools in the same villages. Their empirical findings indicated that by the time children in private schools are in class 3, they are 1.5-2.5 academic years ahead of public school students. Further, they also found that school teachers employed by the government were more educated and better trained compared to private school teachers, even though student test scores were higher in private schools. That study also noted that private schools were not evenly distributed geographically as the public schools were, and private schools were not affordable to everyone, especially children from low income households.

The study results for demographic location show that, compared to urban areas, the probability of a child participating in child labor and religious education increased by 0.031 and 0.0301 respectively. Keeping other variables constant, compared with urban areas, the probability of secular school attendance decreased by 0.063 in rural areas.

4.2.2   Comparison of child's activities between rural and urban areas

A comparative analysis of chosen child's activities between urban and rural areas (Tables 1.11 and 1.12 in the appendix) found several relevant differences. In urban areas, household per-capita income was highly associated with increased secular school attendance and decreased combined work and secular school attendance and inactivity. In rural areas, an increase in daily per-capita household income was associated with decreased inactivity and combined work and secular school attendance, and to increased probability of participation in religious education. From the values of the coefficient and significance level, income had a greater influence on increased secular school attendance, and decreased combined work and secular school attendance and inactivity in urban areas compared to the rural areas. These findings contradict those of Ersado (2005) in the context of Nepal, Peru, and

Zimbabwe that poverty was the main cause of child labor and low rates of school enrollment in rural areas, due to the lack of support in urban areas.

The impact of education level of the head-of-household had similar effects on childhood activity selection in both urban and rural areas except with regard to combined work and secular school attendance, which was not statistically significant in rural areas. Results show that child labor was more common in rural areas compared to urban areas. Based on household perception data it appears that in urban areas the demand for school education was more inelastic compared to rural areas.

The gender of a child also had different effects on probability of childhood activity selection between urban and rural areas. The probability of a girl attending secular school decreased and the probability of engaging in child labor was higher in rural compared to urban areas.

4.2.3   Comparison of child's activities selection by gender

The comparison of childhood activity selection by gender (see Tables 1.13 and 1.14 in the appendix) shows that the associations of household daily per capita income with activity choices were only statistically significant with increases in the probability of secular school education and in decreases of the probability of combined work and secular school attendance in the case of male children. Forgirls, increased head-of-household education levels were associated with decreases in the probability of child labor, combined work and secular school attendance, and inactivity. The same trends can be observed for RCP. The role of mothers in decision making had a greater association with decreased probability of child labor for female children.

Results for public versus private education performance gap show that increases in this gap were associated with increases in the probability of combined work and secular school attendance for male children, and with decreases in the probability of secular schooling for female children. Relative to urban areas the selected activity for female children was more likely to be combined work and secular school attendance as compared to male children.

In the response variables presented in both tables, the variable FIP is missing for male children. The separate MLP analyses for male and female exhibited a problem in the case of male children. The reason for this discrepancy appears to be that parents treat male children

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differently than female children. Parents who hold the opinion that school is important will send male children to secular schools. Although this is reflected in reported FIP perceptions, parents are not consistent in their perspective with respect to activity choices for girls. This phenomenon may contribute to the different pattern of selection for the activity variable of child labor results for male children and female children. If a head-of-household reports holding the belief that secular schooling increases future income of a child, in the case of male children only the childhood activity of "child labor" remains empty. This shows that none of the male children at the age of 5-14 years old were found to engage in child labor. Thus a technical consequence is that logistic regressions that include the variable FIP will result in "non-solvable" errors for male children whereas for female children this problem did not occur.

5 Conclusions

The primary objective of this study was to identify and describe the determinants of participation in child's activities with an emphasis on comparisons with the household choice of secular schooling for children aged 5-14 years. The impacts of important household, child, and community variables on the selection of child's activities such as secular school attendance, religious education, child labor, combined work and secular school attendance, and inactivity were analyzed.

Based on the study results, daily per capita income had a statistically significant impact in determining child activities. Increasing income was associated with decreases in child labor, combined work and secular school attendance, inactivity, and with increases in secular school attendance. Inactivity was more responsive to changes in income, followed by combined work and secular school attendance, and child labor. This entails that poverty may favor decisions to allow children to be inactive and to work and attend secular school simultaneously. As a whole, there was little difference in the choice of religious schooling for children based on household income variability.

On the other hand, the education level of head of household also had statistically significant associations with the choice of childhood activity. Increased education of the head-of-household was associated with decreased probability of selection of inactivity, child labor, and combined work and secular school attendance. Additionally, the age of the head-of-

household had an inverse relationship with the decision to send children to attend secular school.

Pakistan is ranked at marginal for significantly less spending (less than two percent of GDP) on public education among developing countries. Inadequate budget allocation for education undermines efforts like monitoring, training qualified teachers, and infrastructure improvements, resulting in poor quality of education, especially in rural areas. This results in increased unemployment rates for individuals attending public education institutions, leading to an adverse perception among the middle and lower-middle socio-economic classes who cannot afford higher quality private education for their children. This is becoming one of the critical factors that undermine the goals of universal primary education in countries like Pakistan. This suggests that failure to consider head-of-households' perception of public school education is likely to distort the understanding of the demand for public education in the country.

Improvement in FIP of heads-of-household had an inverse relationship with religious education enrollment, child labor, combined work and secular school attendance, and inactivity. The findings of this study confirm that an improvement in RCP decreased religious education enrollment. Thus, the fact that households think secular school education is dissonant with religious values is more important than income in the decision to send children to *madrassah*.

With regard to the child variables of child age and gender, both were related to the selection of activity. Increased age of a child was associated with decreased probability of secular schooling, religious education, and inactivity, whereas the probability of choosing combined work and secular school attendance and child labor both increased. In the case of gender, there was a decrease in the probability that girls would attend secular school and an increase in the probability of girls being engaged in child labor. The descriptive analysis shows that gender was also associated with differential activity selection between rural and urban areas.

Increases in the performance gap of public and private schools were associated with decreases in secular school attendance and increases in the probability of selecting religious education, child labor, combined work and secular school attendance, and inactivity. One

possible explanation for this might be that the parents who wanted to educate their children but are wary of the low quality of public schools preferred to have them participate in religious education or to work in combination with secular school attendance to get some work experience. Having some work experience along with a secular school education might increase the future productivity of children from low-to-middle income households. These conclusions are supported from the findings of Rosati and Rossi (2007) that at the community level, improving the quality and availability of education reduced rates of child labor. The study results show that the distance from district capital had a significant role only in case of choosing religious education and inactivity. Any increase in the distance from district capital was associated with a decrease in the probability of choosing religious education and with an increase in the probability of choosing inactivity. In rural areas, secular school enrollment was lower than in urban areas, whereas child labor and religious education enrollment were higher. These empirical results are showing that there is a strong need of improvement of public schools especially in rural areas.

A comparative analysis of the selection of child's activities in urban and rural areas provided interesting findings. For example, household income had a more important role in choosing secular school attendance, and decreasing combined working and going to school, and inactivity in urban areas compared to rural areas. The impact of the education level of the head-of-household had similar effects on the choice of child's activities except with combined work and secular school attendance in rural areas, where it was statistically insignificant. From the comparison of household perceptions data, the demand for school education is comparatively more inelastic in urban areas relative to rural areas. The probability of a girl not attending school and engaging in child labor is higher in rural areas compared to urban areas. Similarly the probability that households choose to allow female children to both work and attend secular school is higher in rural areas.

The gender comparison results show that daily per capita household income had an important influence and was associated with increased probability of secular school education and decreased probability of combined work and secular school attendance among male children. Compared to the girls, the education level of the head-of-household mattered more and was associated with decreased probability of combined work and secular school attendance for male children. The same trends can be observed for religious

compatibility perception. The role of the mother in decision making played an important role and was associated with decreased probability of choosing child labor for girls as compared to male children male children. An increase in the average annual performance gap between public and private schools was associated with increases in the probability of combined work and secular school attendance for male children, and decreased probability of secular schooling for girls. Results for location show that in rural areas, the probability of combined work and secular school attendance increased for girls relative to male children. We also found that parents who were of the opinion that school is important to future earning capacity were more likely to choose secular education for male children, whereas in the case of female children they might not make the same activity choice. The government should focus more on female education in the rural areas.

References

Admassie, A. 2000. "The Incidence of Child Labor in Africa with Empirical Evidence from Rural Ethiopia," *ZEF Discussion Paper on Development Policy* No. 32. Zentrum für Entwicklungsforschung (ZEF), Bonn.

Andrabi, T., J. Das, A. I. Khwaja, and T. Zajonc. 2006. "Religious school enrollment in Pakistan: A look at the data,". *Comparative Education Review* 50 (3) 446 – 477.

Alderman, H., P. F. Orazem, and E. M. Paterno. 2001. "School quality, school cost, and the public/ private school choices of low-income households in Pakistan," *The Journal of Human Resources* 36 (2) 304 – 336.

Anderson, J. A. 1984. "Regression and Ordered Categorical Variables," *Journal of the Royal statistical Society Series* B 46: 1-30.

Aslam, M. 2009. "Education Gender Gaps in Pakistan: Is the Labor Market to Blame?," *Economic Development and Cultural Change* 57 (4).

Assaad, R. , D. Levison, and N. Zibani. 2010. "The Effect of domestic Work on Girl's Schooling: Evidence from Egypt," *Feminist Economics* 16 (1), 79-128.

Bacolod, Marigee P. and Paiya Ranjan. 2008. "Why child work, attend school, or stay idle: The role of ability and household wealth, Economic," *Development and Culture change* 56 (4), 791-828.

Basu, K. and P. Van. 1998. "The Economics of child labor," *American Economic Review* 88 (3) 412 – 427.

Barro, Robert J. 1991. "Economic growth in a Cross Section of Countries," *The Quarterly Journal of Economics* 106 (2), 407-443.

Barro, Robert J. 2001. "Human capital and growth," *American Economic Review 91*(2), 12–17.

Barro, Robert J. and Jong-Wha Lee. 2001. "International Data on Education attainment: Updates and Implications," *Oxford Economic Papers* 53 (3), 541-563.

B.B.S. 2009. "Statistical Yearbook of Bangladesh 2008," *Bangladesh Bureau of Statistics, Planning Division, Ministry of Planning*, Government of the People's Republic of Bangladesh.

Brac, report. 2008. "BRAC Blog: UU Secretary General Says Bangladesh on its Way to Becoming a Middle Income country," Wednesday, November 26, 2008. (http://blog.bracusa.org/2008/11/un-secretary-general-says-bangladesh-on.html. accessed 27 Oct. 2011)

Becker, G.S. 1983. "Human capital, a theoretical and empirical analysis with special reference to education," *University of Chicago Press, Chicago*.

Becker, G.S. 1975."Investment in Human Capital: Rates of Return," *NBER Chapters, in Human Capital: A theoretical and empirical analysis with special reference to Education,* 2nd ed: (P. 45-144). National Bureau of Economic Research. (http://www.nber.org/chapters/c3735.pdf , accessed 01 July 2011)

Becker, G.S. 1991. "A Treatise on family," *Harvard University Press, Cambridge*, MA, enlarge edition.

Becker, G.S. 1993. "Nobel Lecture: The Economic Way id of Looking at Behavior," *Journal of Political Economy* 101 (3), 385-409.

Bedi, A.S. and John H. Y. Edwards. 2002. "The impact of schooling quality on earnings and education returns-evidence from a low-income country," *Journal of Development Economics* 68 (2002) 157-185.

Behrman, J.R. 1999. "Labour markets in developing countries," *In O. Ashenfelter and D. Card (eds.), Handbook of Labour Economics*, Vol. 3B, Amsterdam: Elsevier, pp. 2859-2939.

Behrman, J.R., D. Ross and R. Sabot. 2008. "Improving quality versus increasing the quantity of schooling: Estimates of rates of return from rural Pakistan," *Journal of Development Economics* 85 (2008) 94 – 104.

Behrman, J.R. and Birdsall, N. 1983. "The quality of schooling: quantity alone is misleading," *American Economic review* 73, 928-46.

Bhalotra, S. and Z. Tzannatos. 2003. "Child labor: What have we learn?," *Social Protection Discussion Paper Series*, No. 0317. Social Protection Unit Human Development Network, the World Bank.

Bhalotra, S. and Heady C. 2003. "Child farm labor: the wealth paradox," *World Bank Economic Review* 17, 197–227.

Boozer, M. and T. Suri. 2001. "Child labor and schooling decisions in Ghana," *Mimeograph, Yale University*.

Card, D. and Krueger, A. B. 1992. "Does schooling quality matter? Returns to education and the characteristics of public schools in the United States," *Journal of Political Economy* 100, 1-40.

Chen, Hung-ju. 2005. "Educational systems, growth and income distribution: a quantitative study,". *Journal of Development Economics* 76 (2005) 325 – 353.

Dessy, Sylvain E. and S. Pallage. 2001. "Child Labor and Coordination failures," *Journal of Development Economics* 65 (2001) 469-476.

Dorman, P. 2008. "Child labor, education and health*," Areview of the literature I.L.O. Intenational Programme on the Elimination of Child Labor,* (IPEC).

Dow, Jay K. and James W. Endersby. 2004. "Multinomial probit and multinomial logit: a comparison of choice models for voting research," *Electoral Studies* 23 (2004) 107-122.

Duryea, S. and M. A. Kuenning. 2003. "School attendance, child labor and local labor market fluctuations in urban Brazil," *World Development* 31 (7) : 1165-1178.

Dumas, C. 2007. "Why do parents make their children work? A test of the poverty hypothesis in rural areas of Burkina Faso," *Oxford Economic Papers* 59 (2007), 301-329.

Edmonds, E. 2007. "Child Labor," *NBER working paper*, 12926. National Bureau of Economic Research.

Edmonds, E. 2006. "Child Labor and Schooling Responses: To Anticipate Income In South Africa," *Journal of Development Economics* 81(2006) 386 – 414.

Edmonds, E. 2005. "Does Child Labor Decline With Improving Economic Status?," *The Journal of Human Resource* 40(1) 77-99.

Emerson, P. M. and S.D. Knabb. 2006. "Opportunity, Inequality and the Intergenerational Transmission of Child Labor," *Economica* (2006) 73: 413-434.

Ersado,L. 2005. "Child Labor and schooling decisions in urban and rural areas: comparative evidence from Nepal, Peru, and Zimbabwe," *World Development* 33 (3): 455-480.

Glick, P. and D.E. Sahn. 2006. "The demand for primary schooling in Madagascar: Price, quality, and the choice between public and private providers," *Journal of Development Economics* 79 (2006) 118 – 145.

Glewww, P. and H. G. Jacoby. 2004. "Economic growth and demand for education: Is there a wealth effect?," *Journal of Development Economics* 74 (2004) 33 – 51.

G.O.P. 2011: *Economic Survey of Pakistan 2010-2011*, Economic advisor's wing, Ministry of Finance Islamabad, Pakistan.

Greene Willam H. 2003. *Econometric Analysis*, Fifth Edition. Pearson Education International, page 725.

Harmon, C., H. Oosterbeek, and I. Walker. 2003. "The Returns to Education Microeconomics," *Journal of Economic Surveys* 17(2), 116–155.

Hazarika, G. and Arjun S. Bedi. 2002. "Schooling Cost and Child Labor in Rural Pakistan*," ZEF Discussion Paper on Development Policy,* No. 52. Zentrum für Entwicklungsforschung (ZEF), Bonn.

Hazarika, G. 2001. "The Sensitivity of Primary School Enrollment to the Cost of Post-primary Schooling in Rural Pakistan: A Gender Perspective," *Education Economics* 9 (3): 237-244.

Hou, Xiaobui. 2009. "Wealth Crucial but Not Sufficient Evidence from Pakistan on Economic Growth, Child Labor, and Schooling," *Policy Research Working Paper*, 4831. The World Bank Policy and Poverty Unit Poverty Reduction, Economic Management, Finance and Private Sector Development.

James, E. 1994. "The Public and Private Division of Responsibility for Education," *International Encyclopedia of Education*, Second Edition, Oxford: Elaevier Science Ltd, 1994.

Kambhampati, U.S. and R. Rajan 2006. "Economic Growth: A Panacea for Child Labor?," *World Development* 34 (3): 426-255.

Khan, A. 2000. "Adolescents and Reproductive Health in Pakistan: a literature review," *Research Report* No. 11. Islamabad, Population Council and UNFPA.

Krueger, Alan B., and Mikael Lindahl. 2001. "Education for Growth: Why and for Whom?" *Journal of Economic Literature* 39(4): 1101–1136.

LEAPS (2008). *Learning and educational achievement in Punjab schools Report for 2008.* A joint Project between World Bank (South Asia DEC), Harvard University, Pomona College and LEAPS (Pakistan).

Long, J. S. and J. Freese. 2006. *Regression Model for Categorical Dependent Variables Using Stata,* second Edition. page 336.

Maitra, P. and R. Ray. 2002. "The Joint Estimation of Child Participation in Schooling and Employment: Comparative Evidence from Three Continents," *Oxford development Studies* 30 (1): 41-62.

Mankiw, N. Gregory, David Romer and David N. Weil. 1992. "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics* 2(2), 407–437.

Mansur, K., A. Rahim and R. Roslinah. 2009. "Perception Towards the Importance of Education Among the Muslim Women in Papar, Saban (Malasia)," *MPRA, Munich Personal,* Re PEc Archive, MPRA Paper No.13430. (http://mpra.ub.uni-muenchen.de/13430/1/MPRA_paper_13430.pdf, accessed 16. Feb. 2009)

Miller, P.W., Mulvey C. & Martin, N. 2001. "Genetic and Environmental Contributions to Education Attainment in Australia," *Economics of Education Review* 20 (3), 211-224.

G.O.P. 2008. *Economic Survey of Pakistan*, 2007-08, Ministry of Finance, Government of Pakistan, Islamabad. (http://finance.gov.pk/survey/chapters/Oveview%20of%20the%20economy08.pdf , Accessed 22 May 2009)

Marjoribanks, K. 1991. "Family Environment and Cognitive Correlates of Young Adults' Social' Status Attainments: Ethnic Group Differences," *Journal of Biosocial Science* (1991), 22: 491.498.

Nelson, Richard R. and Edmund S. Phelps. 1966. "Investment in Humans, Technological Diffusion, and Economic Growth," *The American Economic Review 56*, 69–75.

Pereira, J., and M. S. Aubyn. 2009. What Level of Education Matters Most for Growth ? Evidance from Portugal," *Economics of Education Review* 28 (2009) 67 – 73.

Petrakis, P. E., & Stamatakis, D. 2002. "Growth and Educational Levels: A Comparative Analysis," *Economics of Education Review 21*(5), 513–521.

P.S.L.M. 2006. *Pakistan Social and Living Standard Measurement Survey, 2005-06.* Government of Pakistan.

P.M.D.G. 2010. *Pakistan Millennium Development Goals Report,* Development Amidst Crisis. Government of Pakistan Planning Commission, Centre for Poverty Reduction and social Policy Development Islamababd.

Psacharopoulos, G. and Velez, E. 1993. "Education Quality and Labor Market Outcomes: Evidence from Bogota, Colombia," *Sociology of Education* 66, 130-45.

Psacharopoulos, G. and Harry Anthony Patrinos. 2004. "Returns to Invest in Education: A Futher Update," Education Economics 12 (2), 111-134.

Ray, R. 2000. "Analysis of Child Labor in Peru and Pakistan: A Comparative Study," *Journal of Population Economics* (2000)13: 3-19.

Ravallion, M. and Q. Wodon. 1999. "Does Child Labor Displace Schooling? Evidence on Behavioral Responses to and Enrollment Subsidy," *World Bank Policy Research Working Paper*, No. 2116.

Rosati, F.C., and M. Rossi. 2003. "Children's Working Hours and School Enrolment: Evidence from Pakistan and Nicaragua," Center for International Studies on Economics Growth. CEIS Tor Vergata, *Research Paper Series,* 9 (25): July 2003.

Rosati, F.C., and M. Rossi. 2007. "Impacts of School Quality on Child Labor and School attendance: The case of Conafe Compensatory education Program in Mexico: Understanding Children's Work," *Working Paper. Rome*, UCW.

Rosenzweig, M. R. 1978. "Rural Wages, Labor Supply and Land Reform: a Theoretical and Empirical Analysis," *American Economic Review* 68, 847-61.

Rosenzweig, M. R. and Kenneth I. Wolpin. 1985. "Specific Experience, Household Structure, and Intergenerational Transfers: Farm family Land and Labor Arrangement in Developing Countries," *The Quarterly Journal of Economics* 100, 961-987 (supplement).

Sathar, Z. A., M. ul Haque, Azeema F., M. Sultana, C.B. Lloyd, J.A. Diers and M. Grant. 2003. "Adolescents and Youth in Pakistan 2001-2002," *A Nationally Representative Survey,* Islamabad/New York: Population Council.

Sawada, Y., and M. Lokshin. 2001. "Household Schooling Decision in Rural Pakistan," *World Bank Policy Research Working Paper* No.2541.

Sawada, Y., and M. Lokshin. 2009. "Obstacles to School Progression in Rural Pakistan: An Analysis of Gender and Rivalry Using Field Survey Data," *Journal of development Economics* 88 (2009) 335-347.

Schultz, T.W. 1960. "Capital Formation by Education," *Journal of Political Economy* 68: 571-583.

Sianesi, B., and J. V. Reenen. 2003. "The Returns to Education: Macroeconomics," *Journal of Economic Surveys* 17(2), 157–200.

Singer, P.W. 2001. "Pakistan's Madrassa: Ensuring a System of Education not Jihad," *Brookings Institutions Analysis Paper,* 41. Washington D.C.

Self, S., & Grabowski, R. 2004. "Does Education at All Levels Cause Growth? India, A Case Study," *Economics of Education Review 23*(1), 47–55.

Stair, A., T.J. Rephann and M. Heberling. 2006. "Demand for Public Education: Evidence from a Rural School District," *Economics of Education Review* 25 (2006), 521-531.

Stern, Jessica. 2000. "Pakistan's Jihad Culture," *Foreign Affairs* 79 (6): 115-126.

Square, L. 1981. "Employment Policy in Developing Countries: A Survey of Issues and Evidence," *Oxford: Oxford University Press*.

Swanminathan, M. 1998. "Economic Growth and The Persistence of Child Labor: Evidence from an Indian City," *World Development* 26:1513-1528.

Tansel, A. 2002. "Determinants of Schooling Attainment of Boys and Girls in Turkey: Individual, Household and Community Factors," *Economics of Education Review* 21 (2002) 455 – 470.

U.N.E.S.C.O. 2009. "Overcoming Inequality: Why Governance Matters," *Education For All (EFA) Global Monitoring Report*. (http://unesdoc.unesco.org/images/0017/001776/177683e.pdf accessed 22 March 2011).

U.N.E.S.C.O. 2008. "Education For All by 2015 Will We Make It?," *Education For All (EFA) Global Monitoring Report*. Online at (http://unesdoc.unesco.org/images/0015/001547/154743e.pdf Posted 06 March 2011/ 16:25.)

U.N.E.S.C.O. 2011. "Comparing Education Statistics Across the World - Focus on Secondary Education," *Global Education Digest 2011,* UNESCO Reference Works Series.

Van de Walle, D. and Gunewardena, D. 2001. "Sources of Ethnic Inequality in Vietnam," *Journal of Development Economics* 65, 177-207.

Williams, T., Harsel, Y., Clancy, J., Miller, H., and Greenwood, C. 1987. "Participation in Education," *ACER Research Monograph Number,* 30. Australian Council for Educational Research. Victoria.

Appendix

Table 1.9 Summaries of the Descriptive Statistics of selected variables

No.	Variables	Obs.	Mean	Std. Dev.	Min.	Max.
1.	**Child activity**	2496	1.865	1.154	1	5
2.	lndpcainc	2496	4.363	0.621	2.551	6.566
3.	hhhedu	2496	6.468	5.725	0	18
4.	hhhage	2496	44.962	8.873	31	84
5.	FIP (categorical)	2496	2.197	0.871	1	3
6.	RCP (categorical)	2496	2.285	0.740	1	3
7.	rmdecm (dummy)	2496	0.333	0.471	0	1
8.	chage	2496	10.112	2.589	5	14
9.	chgend (dummy)	2496	0.458	0.498	0	1
10.	resgap	2496	26.960	8.906	11.5	49.833
11.	disdistcap	2496	46.619	47.020	5	225
12.	rural (dummy)	2496	0.631	0.482	0	1

Sources: - survey data 2009

Table 1.10 Multinomial probit estimates of preferred child activity

Covariates	Going to school	Child labor	Working & schooling	Staying inactive
Log value of daily per-capita income (measured in Pak. rupee)	-0.060 (0.121)	-0.153 (0.121)	-0.393** (0.133)	-0.964*** (0.224)
Years of school education successfully completed by head of household	0.037* (.015)	-0.120*** (0.018)	-0.113*** (0.019)	-0.129*** (0.036)
Age of the household head	-0.016* (.007)	0.01 (.007)	0.001 (0.007)	0.004 (0.01)
Perception regarding impact of schooling on future earnings of a child (disagree vs. ambivalent)	0.756*** (.156)	-0.342 (0.147)	0.352* (0.167)	-0.740*** (0.246)
Perception regarding impact of schooling on future earnings of a child (disagree vs. agree)	2.211*** (.197)	-1.141*** (0.172)	0.616* (0.250)	-0.398 (0.389)
Perception on compatibility of school education with religious values (dissonant vs. ambivalent)	1.028*** (.157)	1.042*** (0.144)	0.826*** (0.174)	1.232*** (0.244)
Perception on compatibility of school education with religious values (dissonant vs. compatible)	2.599*** (.234)	2.104*** (0.254)	0.2725*** (0.264)	2.624*** (0.322)
Role of mother of child in decision making process (rmdecm = 1 when mother as a role in decision making and 0 if otherwise)	0.264 (.168)	-0.467* (0.208)	-0.141 (0.208)	-0.572 (0.382)
Child age (changes from 5 to 14 years)	0.029 (.028)	0.427*** (0.021)	0.469*** (0.033)	-0.200*** (0.047)
Gender of child (chgend =1 when child is female and 0 otherwise)	-0.669*** (.132)	1.058*** (0.130)	-0.850*** (0.157)	0.143 (0.199)
Average annual result gape between public and private schools in the area	-0.041*** (.011)	0.017 (.011)	0.002 (0.013)	-0.055*** (0.016)
Distance from district capital	0.010*** (.002)	-.005* (.002)	0.004 (0.002)	0.016*** (0.002)
(Rural) dummy for location	-0.601*** (.181)	0.074 (0.198)	-0.080 (0.212)	-0.490 (0.292)

< 0.1*, < 0.05**, and < 0.01***   Sources: - survey data 2009

Note:-The in response variables 'religious education enrolments' is the base outcome category

Numbers in brackets are robust standard errors

Table 1.11 Marginal effects on the probability of preferred child activity with respect to explanatory variables in urban areas

Particulars	School going	Religious education	Child labor	Working & schooling	Staying inactive
Log value of daily per-capita income (measured in Pak. rupee)	0.045*** (0.014)	0.007 (0.013)	0.002 (0.012)	-0.033*** (0.010)	-0.020* (0.008)
Years of school education successfully completed by head of household	0.011*** (0.001)	0.004* (0.002)	-0.008*** (0.002)	-0.005*** (0.001)	-0.002* (0.001)
Age of the household head	-0.004*** (0.001)	0.001 (0.001)	0.001 (0.001)	0.001* (0.0007)	0.00006 (0.0004)
Perception regarding impact of schooling on future earnings of a child (disagree vs. ambivalent)	0.086* (0.042)	-0.002 (0.021)	-0.021 (0.031)	-0.033 (0.027)	-0.030 (0.017)
Perception regarding impact of schooling on future earnings of a child (disagree vs. agree)	0.327*** (0.048)	-0.051 (0.028)	-0.154*** (0.035)	-0.079** (0.027)	-0.043* (0.017)
Perception on compatibility of school education with religious values (dissonant vs. ambivalent)	0.101 (0.056)	-0.191*** (0.056)	0.037 (0.019)	0.028* (0.012)	0.024** (0.008)
Perception on compatibility of school education with religious values (dissonant vs. compatible)	0.168** (0.059)	-0.274*** (0.057)	-0.007 (0.023)	0.091*** (0.019)	0.022* (0.010)
Role of mother of child in decision making process (rmdecm = 1 when mother as a role in decision making and 0 if otherwise)	0.038 (0.023)	0.023 (0.018)	-0.059* (0.019)	-0.004 (0.018)	-0.002 (0.010)
Child age	-0.021*** (0.004)	-0.01*** (0.002)	0.016*** (0.003)	0.023*** (0.003)	-0.007*** (0.002)
Gender of child (chgend =1 when child is female and 0 otherwise)	-0.050*** (0.011)	0.018 (0.014)	0.100*** (0.014)	-0.064*** (0.012)	-0.004 (0.007)
Average annual result gape between public and private schools in the area	-0.007** (0.003)	0.006** (0.002)	-0.002 (0.003)	0.003 (0.001)	-0.0007 (0.0013)
Distance from district capital	0.0002 (0.0002)	-0.002 (0.002)	-0.0005 (0.002)	-0.0007 (0.002)	0.0007 (0.0013)

< 0.1*, < 0.05**, and < 0.01***   Sources: - survey data 2009

Note:-Numbers in brackets are robust standard errors

Table 1.12 Marginal effects on the probability of preferred child activity with respect to explanatory variables in rural areas

Particulars	School going	Religious education	Child labor	Working & schooling	Staying inactive
Log value of daily per-capita income (measured in Pak. rupee)	0.027 (0.014)	0.033* (0.016)	0.004 (0.014)	-0.027* (0.012)	-0.037*** (0.010)
Years of school education successfully completed by head of household	0.014*** (0.002)	0.008*** (0.002)	-0.01*** (0.002)	-0.009 (0.012)	-0.004** (0.001)
Age of the household head	-0.001 (0.001)	0.001 (0.0009)	-0.001 (0.0008)	0.0003 (0.0007)	0.0005 (0.0004)
Perception regarding impact of schooling on future earnings of a child (disagree vs. ambivalent)	0.178*** (0.032)	-0.059* (0.021)	-0.142*** (0.025)	0.058*** (0.019)	-0.035*** (0.011)
Perception regarding impact of schooling on future earnings of a child (disagree vs. agree)	0.468*** (0.043)	-0.172*** (0.033)	-0.283*** (0.028)	-0.029 (0.027)	-0.042*** (0.013)
Perception on compatibility of school education with religious values (dissonant vs. ambivalent)	0.10*** (0.029)	-0.179*** (0.031)	0.071*** (0.017)	0.009 (0.016)	0.017* (0.007)
Perception on compatibility of school education with religious values (dissonant vs. compatible)	0.172*** (0.036)	-0.316*** (0.032)	-0.033 (0.026)	0.079*** (0.026)	0.032* (0.015)
Role of mother of child in decision making process (rmdecm = 1 when mother as a role in decision making and 0 if otherwise)	0.066*** (0.019)	0.002 (0.022)	-0.036* (0.025)	-0.003 (0.019)	-0.025 (0.016)
Child age	-0.024*** (0.003)	-0.031*** (0.003)	0.040*** (0.003)	0.028*** (0.003)	-0.014*** (0.002)
Gender of child (chgend =1 when child is female and 0 otherwise)	-0.095*** (0.016)	0.009 (0.015)	0.189*** (0.013)	-0.093*** (0.013)	-0.008 (0.007)
Average annual result gape between public and private schools in the area	-0.003** (0.001)	0.003* (0.001)	-0.0001 (0.0012)	0.002* (0.001)	-0.001** (0.0013)
Distance from district capital	0.007*** (0.0001)	-0.0009*** (0.0002)	-0.00007 (0.0002)	-0.0002 (0.0002)	0.0004*** (0.00007)

< 0.1*, < 0.05**, and < 0.01***   Sources: - survey data 2009

Note:-Numbers in brackets are robust standard errors

Table 1.13 Marginal effects on the probability of preferred child activity with respect to explanatory variables when children are female

Particulars	School going	Religious education	Child labor	Working & schooling	Staying inactive
Log value of daily per-capita income (measured in Pak. rupee)	0.025 (0.014)	0.017 (0.016)	-0.013 (0.016)	-0.011 (0.008)	-0.018* (0.008)
Years of school education successfully completed by head of household	0.012*** (0.001)	0.004 (0.002)	-0.011*** (0.002)	-0.002* (0.001)	-0.002* (0.001)
Age of the household head	-0.002 (0.0009)	0.001 (0.001)	0.0006 (0.001)	0.0005* (0.0006)	0.003 (0.0004)
Perception regarding impact of schooling on future earnings of a child (disagree vs. ambivalent)	0.063 (0.036)	0.019 (0.027)	-0.050*** (0.033)	-0.010 (0.018)	-0.022 (0.013)
Perception regarding impact of schooling on future earnings of a child (disagree vs. agree)	0.354*** (0.051)	-0.043 (0.035)	-0.257*** (0.042)	-0.016 (0.024)	-0.038** (0.014)
Perception on compatibility of school education with religious values (dissonant vs. ambivalent)	0.052 (0.037)	-0.119*** (0.038)	0.047* (0.023)	0.028* (0.012)	0.0130 (0.009)
Perception on compatibility of school education with religious values (dissonant vs. compatible)	0.140*** (0.041)	-0.253*** (0.038)	0.039 (0.030)	0.052** (0.019)	0.023 (0.014)
Role of mother of child in decision making process (rmdecm = 1 when mother as a role in decision making and 0 if otherwise)	0.087*** (0.018)	0.038 (0.024)	-0.096*** (0.029)	-0.006 (0.014)	-0.023 (0.014)
Child age	-0.019*** (0.003)	-0.023*** (0.003)	0.043*** (0.003)	0.015*** (0.003)	-0.015*** (0.002)
Average annual result gape between public and private schools in the area	-0.005*** (0.001)	0.006 (0.002)	0.002 (0.001)	0.002* (0.0008)	-0.001 (0.0006)
Distance from district capital	0.001*** (0.0002)	-0.001*** (0.0002)	-0.0004 (0.0002)	-0.00004 (0.0001)	0.0003** (0.0001)
(Rural) dummy for location	-0.051* (0.020)	0.0003** (0.025)	0.009 (0.027)	0.036** (0.014)	0.005 (0.012)

< 0.1*, < 0.05**, and < 0.01***   Sources: - survey data 2009

Note:-Numbers in brackets are robust standard errors

Table 1.14 Marginal effects on the probability of preferred child activity with respect to explanatory variables when children are male

Particulars	School going	Religious education	Child labor	Working & schooling	Inactivity
Log value of daily per-capita income (measured in Pak. rupee)	0.051** (0.018)	0.021 (0.015)	0.014* (0.011)	-0.036** (0.014)	-0.050*** (0.012)
Years of school education successfully completed by head of household	0.025*** (0.002)	0.004* (0.002)	-0.015*** (0.002)	-0.005*** (0.001)	-0.006** (0.002)
Age of the household head	-0.0006 (0.0011)	0.001 (0.001)	0.002** (0.001)	0.002* (0.0008)	-0.0002 (0.0004)
Perception on compatibility of school education with religious values (dissonant vs. ambivalent)	0.278*** (0.037)	-0.354*** (0.039)	0.035** (0.019)	0.020 (0.018)	0.022** (0.008)
Perception on compatibility of school education with religious values (dissonant vs. compatible)	0.429*** (0.041)	-0.481*** (0.038)	-0.056*** (0.018)	0.095*** (0.024)	0.013 (0.009)
Role of mother of child in decision making process (rmdecm = 1 when mother as a role in decision making and 0 if otherwise)	0.088*** (0.023)	-0.029 (0.022)	0.033 (0.022)	-0.007 (0.022)	-0.020 (0.014)
Child age	-0.027*** (0.004)	-0.023*** (0.003)	0.022*** (0.003)	0.036*** (0.003)	-0.009*** (0.002)
Average annual result gape between public and private schools in the area	-0.003 (0.002)	0.0004 (0.001)	-0.002 (0.001)	0.005*** (0.001)	-0.0009 (0.0007)
Distance from district capital	0.0003 (0.0003)	-0.0004 (0.0002)	-0.0003 (0.0002)	-0.00014 (0.00025)	0.0005*** (0.0001)
(Rural) dummy for location	-0.071** (0.025)	0.061** (0.023)	0.051** (0.019)	-0.017 (0.021)	-0.028* (0.012)

< 0.1*, < 0.05**, and < 0.01***   Sources: - survey data 2009

Note:-Numbers in brackets are robust standard errors
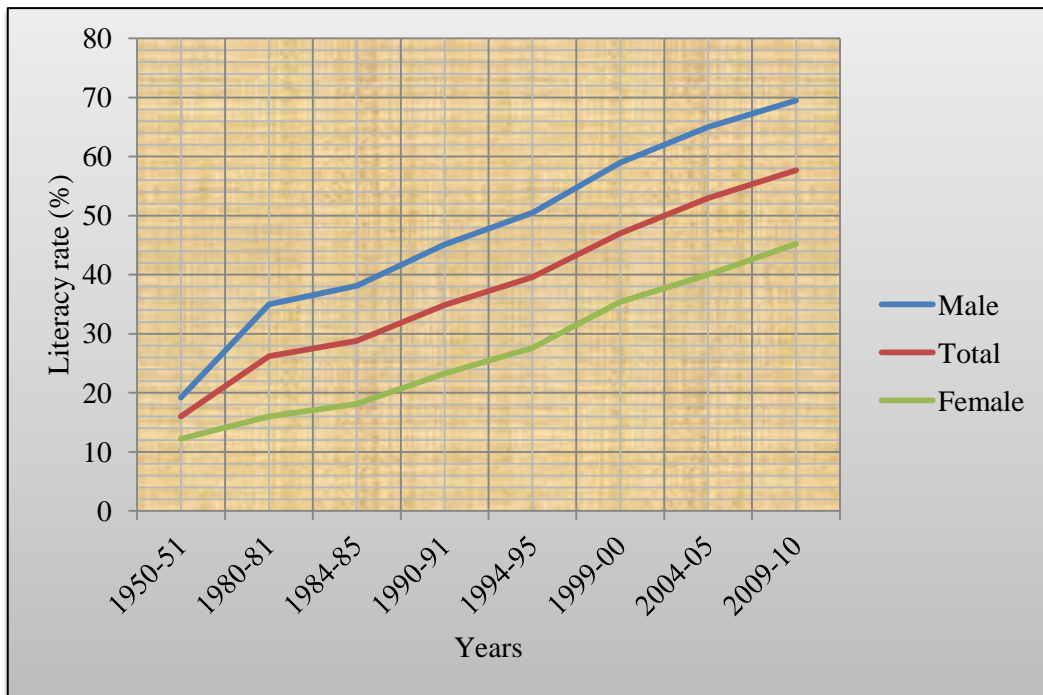
Figure 1.1 Literacy rate trends in Pakistan since 1950   Source: PMDG, 2010
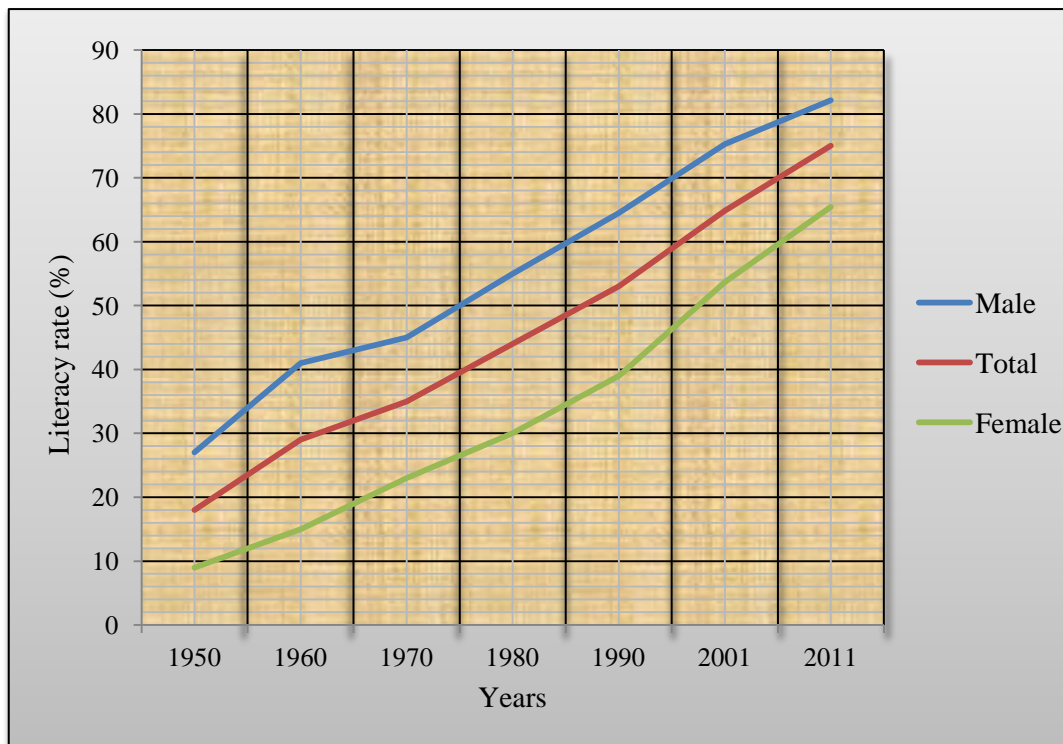

Figure 1.2 Literacy rate trends in India since 1950   Source: UNESCO, 2011
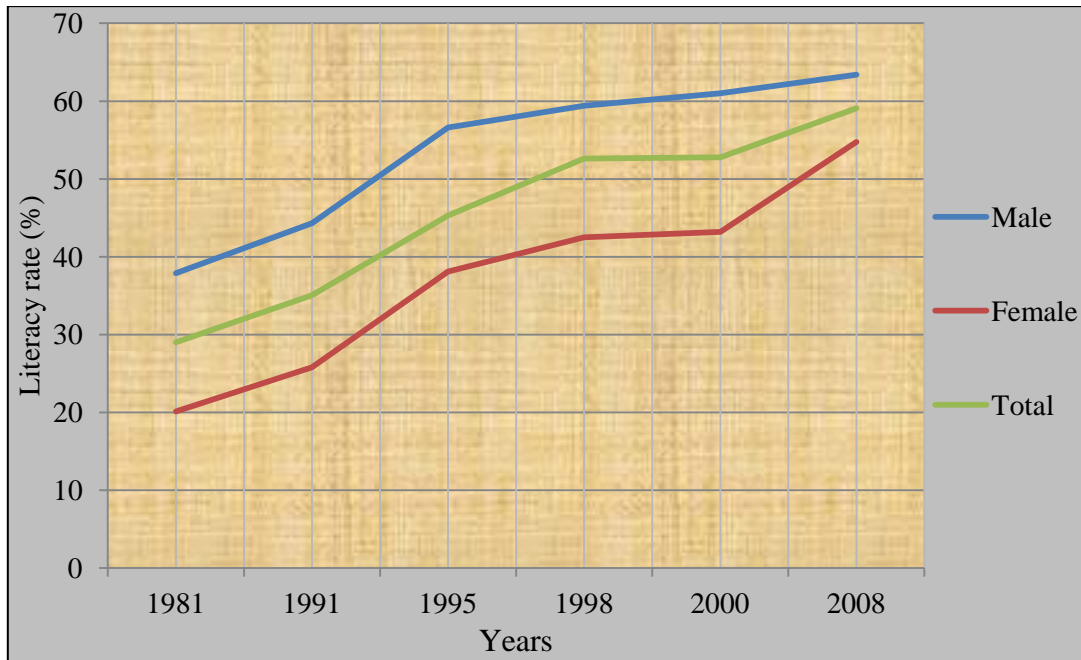
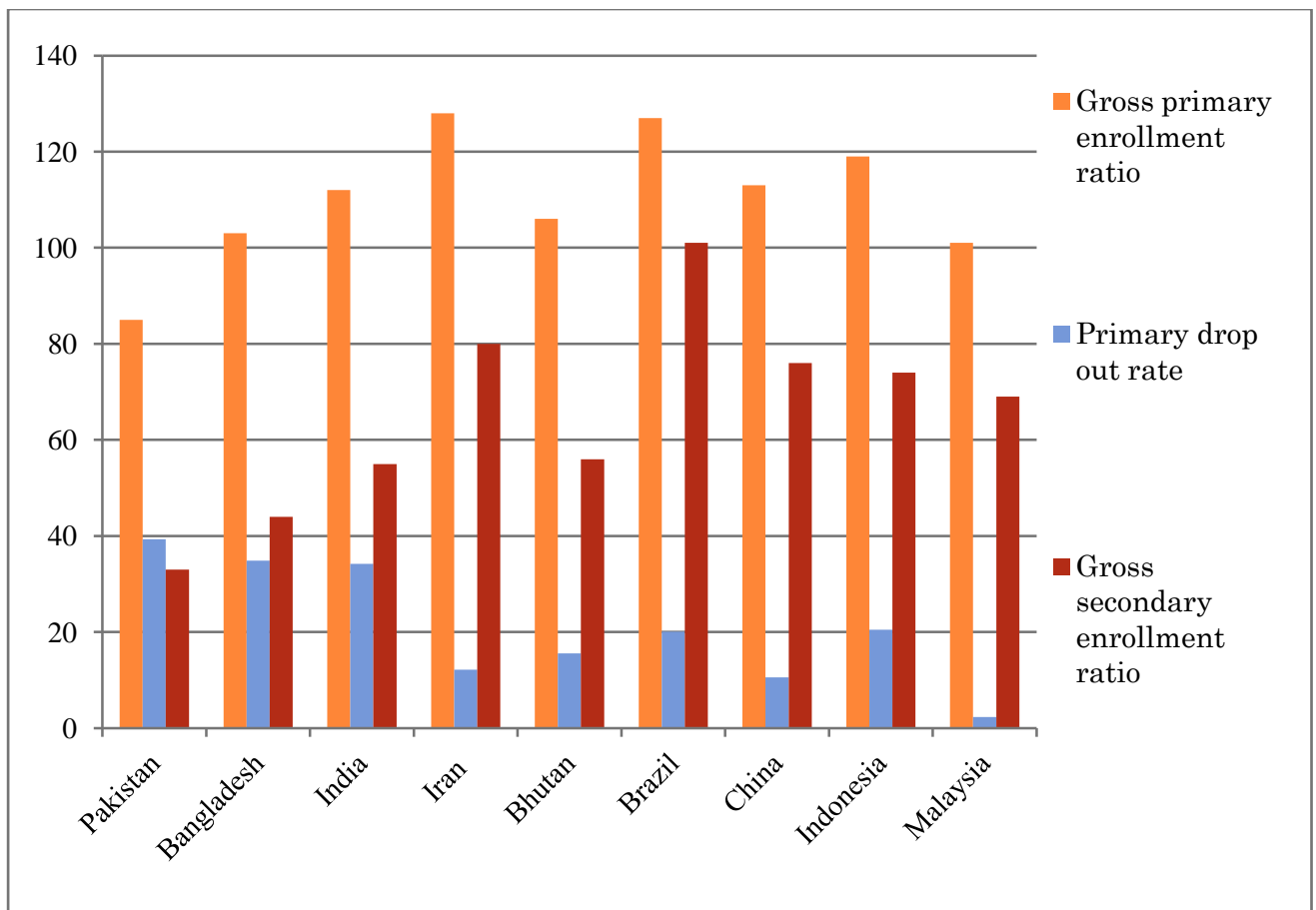Figure 1.3 Literacy rate trends in Bangladesh since 1981   Source: BBS, 2009

Figure 1.4 Comparison of gross primary and secondary enrollments and primary dropout rates of Pakistan with development country of the region
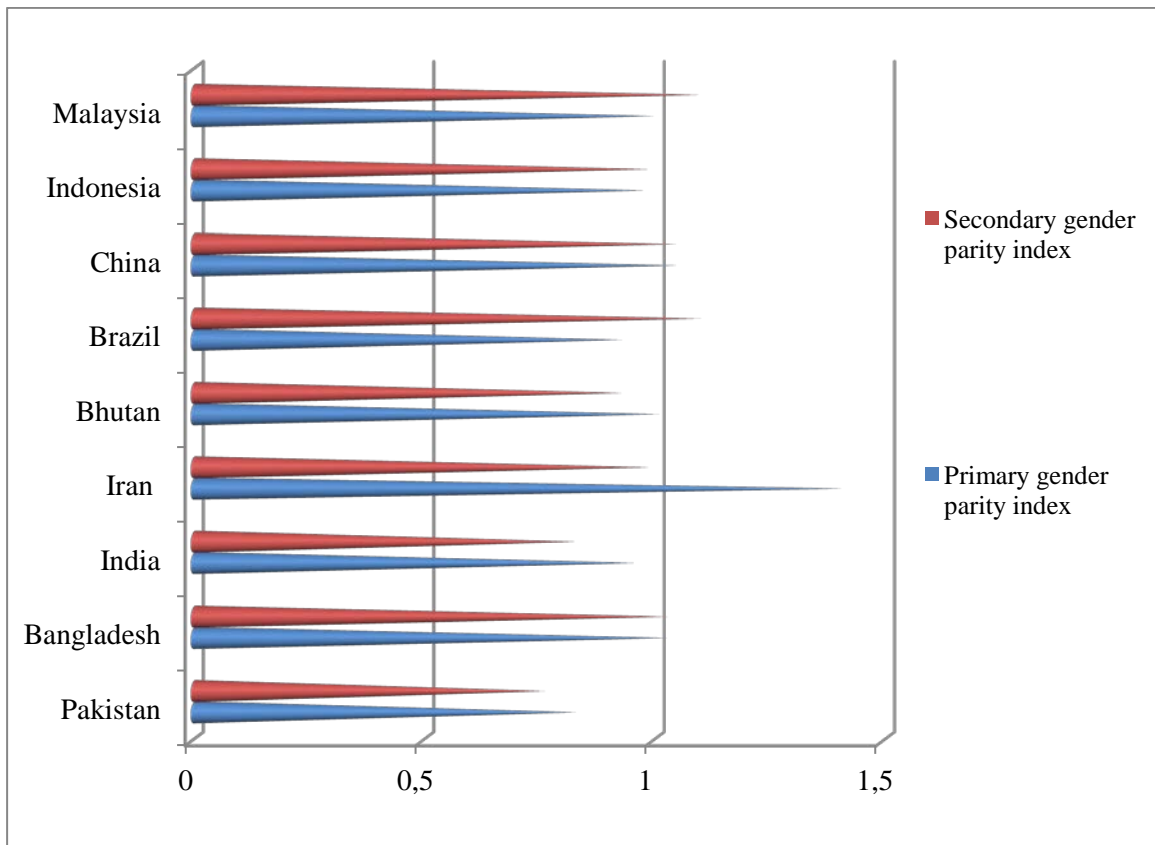
Source: UNESCO Institute for Statistics (UIS) 2010

Figure 1.5 Comparison of primary and secondary gender parity index of Pakistan with development country of the region

Source: UNESCO Institute for Statistics (UIS) 2008