

Child Labour and School Attendance: Evidence from Bangladesh.

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ABSTRACT

This paper uses data from Bangladesh to examine the determinants of child labour and schooling. The theoretical framework adopted in this paper is a standard household production model that analyses the joint allocation of time within the household. Using Multinomial logit model, we then jointly estimate the determinants of schooling and working, combining schooling and work, or doing nothing for 5-17 year old children. Multinomial logit results show that the education of parents significantly increases the probability that a school-age child will specialise in study. Empirical results further show that if the father is employed in a vulnerable occupation, for example, day-labour or wage-labour, it raises the probability that a child will work full time or combine work and study. The presence of very young children (ages 0-4) in the household increases the likelihood that a school-age child will combine study with work. The significant and positive gender coefficient suggests that girls are more likely than boys to combine schooling with work. The children who are sons and daughters of the household-head, as opposed to being relatives living in the household are more likely to specialise in schooling or combine schooling with work.

JEL Classification: I21, D12, J13, O53

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1. Introduction

Child labour levels are high in many developing countries. The International Labour Organisation (ILO) estimates that approximately 250 million children work in the age group of 5-14, at least half of them work on a full time basis. The majority of the world's working children, according to the ILO, are found in Asia (61%), followed by Africa (32%), and Latin America and the Caribbean (7%). Of these working children, 95 per cent are found in developing countries and more than half of these in Asia. Two-thirds of the working children of developing countries live in rural areas and three quarters of them are engaged in agriculture and related activities (ILO, 1997a and ILO, 1997b). Seventy per cent of these working children are unpaid workers; the percentage is about 81 per cent in rural areas (ILO, 1997).

Bangladesh is also experienced high incidence of child labour. According to the Child Labour Survey of Bangladesh (1995-96), the child labour force in Bangladesh is 6.58 million out of the 34.45 million children in the age group of 5-14 years, i.e. 19 per cent of the total child population (5-14) is found to be economically active. Thus, child labour constitutes about 12 per cent of the total labour force of Bangladesh (BBS 1996: 164). The highest portion of child labour is found in agriculture (65.4%), followed by the service sector (10.3%), manufacturing (8.2%), and transport and communication (1.8%). A further 14.3 percent of working children are employed in other activities including informal housework. In the formal sector, garment factories topped the list to absorb the highest number of child workers. These statistics point out the fact that child labour is a substantial issue for Bangladesh that needs to be researched and addressed.

The issue of child labour in Bangladesh became most discussed and debatable in early 1990's when the United States and other foreign buyers refused to import garments from Bangladesh as long as child labour is being used by this industry. Although, the use of child labour in garments factories in Bangladesh attracts most international attention, child labour is much more common in the rural informal sector. Above statistics of child labour in Bangladesh and other developing countries, also reveal that the vast majority of working children are employed in agriculture and domestic service sectors where children are taking part in services, small-scale manufacturing, and various agricultural

occupations; they also perform household chores such as fetching water, collecting firewood, cooking and taking care of younger siblings. Although many of these children are working under family supervision, full-time work can deter them from attending school, and many home-based activities can be as harmful as work performed outside the home (ILO, 1996). Hence, the aim of this study is to investigate the incidence of child labour and school attendance in rural setting of Bangladesh. In particular, this paper focuses on the determinants of child labour, schooling and other activities undertaken by the children.

The rest of the paper proceeds as follows: Section 2 outlines the theoretical framework. Section 3 describes the characteristics of the survey and data set and presents some selected descriptive statistics while section 4 looks at the correlation of child labour with schooling in rural Bangladesh. Section 5 presents the empirical model and estimation issues. The empirical results are reported in section 6. Finally concluding remarks are given in section 7.

2. Theoretical Framework

The theoretical framework adopted in this paper is a household production model introduced by Becker (1965), De Tray (1973), Rosenzweig and Evenson (1977), Browning M. and Chiappori (1998), Radio-Cano (2001) and Emerson and Portela (2001). Here we do not consider that children are making their own choices independently. Rather we assume that children are under control of their parents. Hence any decision regarding whether a child will work or study can be well explained by a model of parental decisions. Parents value the current consumption of the household as well as the human capital attainment of the children. However there is a trade off between current consumption (which is gained by engaging the children in productive activities) and human capital accumulation (child's schooling). If a child is engaged in working, it receives less education which determines fewer earnings in future. The human capital accumulation of the children is the increasing function of schooling. A child can go to school full time or can work full time or can combine work and school or can do neither work nor study. Parents maximise utility as a function of the number of children, quality of children and leisure of household members and consumption of composite goods,

subject to income and time constraints for the household members and the production functions (Becker and Lewis, 1973).

We consider a farming household of a couple with pre-school child (N_p) and school-age (N_s) child in a particular point of time. Fertility is assumed as exogenous. Household's decision regarding child schooling, work and other activities can be analysed by the following approach.

Suppose, parents maximise a utility function

$$U_i = U_f(Q_s, X_f, Z_f) + U_m(Q_s, X_m, Z_m) \quad (1)$$

Where U_f is the father's utility function, U_m is mother's utility function. Q_s is the quality of school-age children, X_f and X_m are the consumption of a composite consumption good of father and mother respectively. The terms Z_f and Z_m represent any individual, household and community characteristics that affect the utility of father and mother respectively.

The quality of a child depends on the amount of time and resources allocated to him and the time and effort devoted by him to acquire education and training (Dasgupta, 1995). Thus Q_s is a linear homogenous production function of the time spent on human capital and the cost of acquiring human capital. The production function of Q_s is:

$$Q_s = Q_s(H_t, e, \alpha); \quad (2)$$

Where H_t is the time spent on human capital (which includes time spent on school attendance and study at home) and e represents other inputs of human capital (educational inputs such as books, tuition fee and writing material, but also travel to school). The term α is technological factor (education and time inputs of parents, school quality and availability) that affects human capital of child. This technology is different for each child depending on their abilities, gender and birth order.

Suppose Y is farm output. We assume here that Y includes also family business and other home production activities. The amount of Y produced and consumed depends on the time inputs of household members and farm scale, the state of household technology, and the efficiency with which production is undertaken. Household combines

these factors to produce commodities that enter their production functions. Thus Y can be expressed as follows:

$$Y = Y(k, h_f, h_m, t_{yf}, t_{ym}, t_{ys}, \beta) \quad (3)$$

Here, equation (3) is a linear homogenous production function, k is farm size, h_f and h_m are the human capital level of father and mother respectively that represents efficiency. The terms t_{ym} and t_{yf} are time spent by father and mother respectively in farm production, β represents the state of household technology and t_{ys} represents time spent by the school-age children in farm production which can be considered as opportunity cost of schooling in absence of formal child labour market in rural area.

Thus the household budget constraint can be written as

$$X + P_n(N_p + N_s) + P_e(N_s Q_s) = V + P_y Y + W_f(h_f) t_{wf} + W_m(h_m) t_{mf} \quad (4)$$

Where X is the total parental consumption of composite good, whose price is normalised to unity; P_n is the cost associated with the raising pre-school and school-age children, P_e is the market price of educational input of school-age children, P_y is the unit price of farm output. The term, W_f is the wage rate of father and W_m is the wage rate of mother if parents participate in wage labour market, t_{wf} , t_{wm} are the time spent by father and mother respectively in wage employment, V is household non-labour income.

All household members have time constraint and assume that parents and school-age children have to spend a fixed amount of time for caring pre-school children. Suppose, the amount of child care time is t_p which is normalized to one. A fixed amount of time, P_{n_p} , is spent by mother in the form of breast feeding, etc and the remaining amount, suppose S_{n_p} , is spent by school-age children for the caring of pre-school children. The leisure of the parents and the children is assumed as exogenous, so total time endowment, M , for each individual is fixed. Thus time constraint for parents and school-age children are, respectively,

$$M = P_{n_p} + t_{ym} + t_{wm} \quad (5)$$

Where P_{n_p} is time spent by mother for raising pre-school children.

$$M = t_{yf} + t_{wf} \quad (6)$$

$$M = S_{np} + Ht + t_{ys} \quad (7)$$

Where S_{np} is time spent by school-age children for raising pre-school children. As child labour market is not so widely spread in rural areas in Bangladesh, so we use only child time use in home production and in acquiring human capital.

The utility function in equation (1) is maximised subject to

$$X + P_n(N_p + N_s) + P_e(N_s Q_s) = V + P_y Y + W_f(h_f) t_{wf} + W_m(h_m) t_{mf};$$

$$Y = Y(k, h_f, h_m, t_{yf}, t_{ym}, t_{ys}, \beta);$$

$$Q_s = Q(Ht, e, \alpha); \quad \text{and the time constraints in (5), (6) and (7)} \quad (8)$$

It can be shown that the above optimisation process will provide a set of household demand functions. If it is assumed that price doesn't change, child's time allocation to school and work and other activities can be represented as

$$j = j(N_p, N_s, \alpha, \beta, Z_m, Z_f, h_m, h_f, k, v) \quad (9)$$

This utility maximisation process of a household generates some interesting hypotheses. For example, children's time use options are influenced by parental characteristics. Parental education influences child's school time use in two ways. Higher level of education of parents creates a higher positive income effect on their child's schooling; as parental income is a positive function of their human capital. Educated parents are more likely to earn more income through farm production and wages that increases schooling. In other way, the level of parental education, especially mother's education is an input of the human capital of children. The higher will be this input the greater will be child's schooling, as mother acts as a house tutor for the children. Better educated parents, particularly mother, have a comparative advantage to prepare their child for school lessons. Moreover, higher level of human capital in parents creates a high demand for schooling in their children. Educated parents value their child's education highly. Hence children with better educated parents will spend more time in schooling and less working. Other components of human capital of the parents, for example, occupation, are expected to show the same effect as education.

We also expect wealthier parents are less resource constrained which makes it easy for their children to attend school instead of working. Although not included in the theoretical model, total land holding is used in the empirical model to capture the wealth aspect of the household. Similarly an exogenous increase in household non-labour income tends to increase child's schooling which in turns would reduce child's work time (market work and household work). However, it is difficult to measure non-labour income in rural Bangladesh as a large portion of the population is engaged with self-employment. In absence of data on non-labour income, Khandkar (1988) and Skoufas (1993) use total land holding as a proxy of non-labour.¹ However, Ilahi (2000)'s view about the use of total land as a proxy of non-labour income is that land holding is also a part the production function of the household farm that creates additional labour demand on the family farm. Hence, the use of total land holding as a proxy of non-labour income is confusing, as it captures wealth and production aspects on it. Ilahi suggests using a stock variable that captures non-labour and non-production aspects of the household wealth. We, therefore, use homestead area as a proxy of non-labour income in the empirical analysis.

The household composition is also expected to have an important influence on the time allocation of children. An increase in the number of pre-school children tends to have a negative effect on child's schooling by demanding more income for raising pre-school child which increases expenditure of the household. An increasing demand for income puts pressure on school-age child to spend more time on income earning activities. On the other hand, pre-school children create more work in the form of child care and housework for school-age child.

The number of school-age children increases income of the household by increasing farm production. At the same time school-age children may also have a negative income effect demanding more human capital for increased number of school age children. Thus, the number of school-age children, N_s raises income and cost of providing each child with one more unit of human capital. Therefore it may tighten or relax the budget constraint depending on the net cost of school-age children.

¹ For a description about the proxies used for non-labour income in literatures, see, Ilahi (2000, pp 15-16).

The price of child's school time has two components; opportunity cost and direct cost of child's school time. The opportunity cost of school time is forgoing children's input to the household production, such as family farm or business or housework (and shadow child wage in the labour market), and the second component captures the direct costs of schooling, for example, books, tuition etc. Other components of school price, such as, school quality, travel time, and the level of human capital of parents also influence child's schooling. In the empirical model, we include distance to primary school and secondary school to represent the opportunity cost of schooling. We expect that if other things being equal, a decrease in direct cost and indirect cost of schooling will increase parents' investment in child's education, and hence increase schooling and reduce child work.

An increase in operated land, k is expected to have a positive income effect and a negative substitution effect on the demand of child's time use in education. The substitution effect is raised from the demand for children in farm production. Finally, an increase in k is likely to decrease schooling and increase child labour by demanding additional labour on operated land. Labour saving technology, β tends to increase farm production and thus increases schooling.

We also expect that children's time allocation will be determined by their age. Older children are expected to spend more time on working and less time on schooling. Gender of the child is included to examine the differential preference of parents for sons and daughter. In the decision regarding the allocation of time in school and work, parents may favour their son and it depends on different social cultural norm, labour market condition and different policies of the government. Children of the household head may allocate their time differently than the children of the other relatives of the household head.

All these views will be explored in the empirical investigation of the paper in section five. First, however, we describe the survey characteristics and data used in the paper in the next section.

3. a. Characteristics of the Survey

The data set used in this study comes from a survey titled ‘Micronutrient and Gender Study in Bangladesh’ by International Food Policy Research Institute (IFPRI). The data in this survey were collected during the period 1996-1997 as part of an impact evaluation of new agricultural technologies being originated through Non-Governmental Organizations (NGOs²). The main objective of this survey was to evaluate the impacts of commercial vegetable and polyculture fish production on the household’s income, resource allocation and nutrition. The survey collected extensive information from 5541 individuals in a sample of 957 households, and also conducted a detailed community survey. It covered all the agricultural seasons in Bangladesh and has provided economic, demographic, agricultural, and gender information. Although the main purpose of this survey was to provide data for an analysis of commercial vegetable and polyculture fish production in Bangladesh, the survey also provided information about the schooling, time use and employment status of each child. Further, for each household, information was obtained on the land owned and operated, expenditure and saving, credit obtained, the decision making power of women, the intra-household food distribution, the household chores undertaken by each household member, birth control, reproductive history and mortality, sanitation and cleanliness, child survival and morbidity.

The survey was a 4-round panel that covered 3 survey sites and includes 47 villages. Three sites covered by the survey are Saturia, Mymensingh and Jessore and come from two divisions of Bangladesh. Saturia and Mymensingh have been chosen from Dhaka division and Jessore has been chosen from Kulna division. Mymensingh is a district itself and located at the northern side of Bangladesh. Saturia thana is under Manikgonj district and situated in the middle of Bangladesh. On the other hand, Jessore district is the southwest part of Bangladesh.

The main aim of the survey was to provide information about commercial vegetable in Saturia thana, polyculture fish production in Jessore and Mymensingh districts. The survey, therefore, collected information about vegetable technology

² NGOs, private humanitarian organizations, work with the people (of the poor country) whose lives are dominated by extreme poverty, illiteracy, disease and other handicaps. They work for the socio-economic development of the chronically marginalized individuals, households and communities to enable them to achieve greater self-reliance in meeting human need.

(AVRDC/GKT³) in Saturia thana, group fishponds (ICLARM/BS⁴) in Jessore, and individual fishponds in Mymensingh (DANIDA/MAEP⁵) district. For this purpose the survey included two-third of the sample households as primary target households (those who participated the specific program or likely to participate) and also included one-third households as non-target households (who did not participate the program or not likely to participate) to augment the data. Finally 313, 320, and 324 households were randomly selected from Saturia, Mymensingh and Jessore respectively.

The Micro Nutrient and Gender Study (MNGS) survey is a 4-round panel survey⁶. However we consider only the first round for the analysis of child labour, because the second, third and fourth rounds include only those household members that were absent in the first round of the survey. They were very few in number thus we expect that they do not affect our analysis very much. We, therefore, restrict our sample only on the children of first round of the survey.

The first round of MNGS consists of 5264 individuals, 2256 of them (42.85 percent) are children or adolescents (Table 1). Of these children, 1827 (81 percent) are children of the household head; the rest are the children of the other household members or non-household members.

Defining Children

According to the definition of International Labour Organization (ILO), children in the age group of 5-14 years should be considered for the analysis of child labour, as a child is defined as a person under 14 years of age. However, we select a cut-off age of 5-17 years for the analysis. The justification for selecting 17 years as the maximum age cut off 17 is as follows. According to the education system of Bangladesh (The education system of Bangladesh is discussed in the following section) student at the age of 17 years should be

³ GKT: Gano Kallyan Trust (it is a local NGO in Saturia thana of Manikganj District); AVRDC: Asian Vegetable Research and Development Centre. Vegetable technology was being disseminated in Saturia by AVRDC/GKT

⁴ ICLARM: International Center for Living Aquatic Resource Management; BS: Banchte Shekha (it is a local NGO in Jessore). BS was introducing group fishponds in Jessore with the help of ICLARM.

⁵ MAEP: Mymensingh Aquaculture Extension Project; DANIDA: Danish International Development Assistance. Individual fish pond technology was introduced by MAEP and DANIDA.

⁶ Round 1: June-September, 1996; Round 2: October-December, 1996; Round 3: February-May, 1997; Round 4: June-September, 1997.

at the end of secondary school or at the beginning of higher secondary school. However the data suggest that there are some children in this age group (5-17) who are still in primary school. For a few children, the first enrolment age is 15 years according to this data set. It is not surprising for a country like Bangladesh, where late enrolment, especially in rural areas, is very common. Thus including the children of 17 years allows us to consider late entry, grade repetition and misreporting of age. Moreover, children under 18 years old never leave home, except daughters who tend to join their husband's family after marriage. Thus our data show that 94 per cent of the children who are aged the 5-17 years are either son/daughter, brother/sister, grand children, niece/nephew or adopted son/ daughter of the household head.

Likewise, we use a minimum age of 5 years, which is the cut-off age between infancy and childhood. Although, official enrolment age in Bangladesh is 6 years, there are some children who start school at age 4 years and 5 years. For the estimation of child labour, five years old may be considered as extreme. But it is very common in rural Bangladesh. A survey by Bangladesh Institute of Development Studies (BIDS⁷1977-78) reports that the rural children in Bangladesh start their economically productive life from 5 years of age (Salauddin, 1981). Our data also show that there are some children in this age group who combine school with work, although they are very few in number.

3. b. Sample Characteristics

For our study we, therefore, select children in the age group 5-17 years. This includes 1740 children, which represents 77.4 per cent of the total children (0-17 years). Among the children between 5-17 years old, there is one household head and sixteen spouses. We exclude them from our analysis. Another 95 children from 51 households who do not have mother are excluded. Thus, we restrict our sample only to children who have both father and mother. The sample size is thus 1628 children. Of these children, 61 per cent are male and, 85 per cent are the children of the household head.

The mean sample characteristics are presented in Table 2. The average age of children in the sample is just over 11 years old. Among 5-17 years of old, the average enrolment age is 6.3 and the average years of schooling 4.3. About 54 per cent children

⁷ Bangladesh Institute of Development Studies, a research organization.

in the sample can read and write and more than 26 per cent children are illiterate. Another 8 per cent children can sign only.

A large number of children, about 70 per cent, come from farming household. About 61 per cent children come from NGO member households and the remaining 39 per cent come from non-NGO member households. Almost 96 per cent of the children are of Muslim origin whereas only 4 per cent of the children are of Hindu origin. The average total land holding by household is 175 decimals (1 decimal = 408 square feet), whereas the average operated land is 114 decimal, and, the average homestead area is 21 decimals. The average year of schooling of father and mother is 3.6 and 1.6 respectively.⁸

4. Child Labour and Schooling in Bangladesh

4. a. Schooling Situation in Bangladesh

In Bangladesh, formal education is delivered mainly by the government. However, a non-formal education system offered by NGOs and government also exists side-by-side targeting the disadvantaged children and young adults. A private owned early childhood development and care program exists for the children of affluent family aged between 3-5 years. Formal education in Bangladesh, however, is divided into 5 years cycle of primary education, 5 years cycle of secondary education, 2 years of higher secondary education and 2-5 years of higher education.

The official age of entry into primary school is 6 years (according to the Primary Education Act, 1992), although many children attend school at the age of 4 or 5 years. Late entry in primary school is also very common in rural Bangladesh. Our data suggest that although average enrolment age is 6.3 in the study area, however, there are some children who enrolled in school at the age of 15 years.

⁸ In a few cases, approximately for 15 per cent children, parents do not refer to the parents of the observed child. Since we were unable to match the children who are not son/daughter of the household head with their parents; the characteristics of the household head and his/her spouse are used to proxy the parental characteristics. Therefore, when we refer to the father and mother, we really mean to either real parents or the proxy.

In Bangladesh, primary education is compulsory for all children. The Government has established a universal primary education to prevent children from early labour. According to the Bangladesh Primary School Act (1992), a child of 6 years old must go to school. To make the school attendance easier for children from poor parents, tuition fees and textbooks are supplied free of cost for all children up to grade 5 and up to grade 8 for female children. An alternative subsidy program, Food-For-Education, has also been implemented to help the destitute children and their parents. Despite all of these measures, a large proportion of children are not yet enrolled in school.

Table 3 shows primary school enrolment rate in Bangladesh in recent years. Of these enrolled in school, the gender gap in primary school enrolment is declining. However, data from the survey also reveal that non-enrolment rate is still high in Bangladesh. Figure 1 show that, by the age of 5 years, around 72 per cent children are not yet enrolled in school. The non-enrolment figure declines gradually up to 9 -11 years, and, at the age of 11 years, it drops to 6.4 per cent. After, 11 years, again, the rate rises, and it reaches to 25.9 at 16 years and 24.7 per cent at 17 years.

Figure 2 depicts how non-enrolment rates vary across boys and girls. This figure shows an opposite picture of the conventional belief that boys receive more education than girls. Boy's non-enrolment rate is higher than girls at all age except at age 14. This is probably because, in recent times, the government of Bangladesh introduced an incentive program with the help of World Bank to increase girl's school enrolment. From the age of 5 years, non-enrolment rates steadily decline to age 11 years for both boys and girls before it increases again. Girl's non-enrolment rises to 17.7 per cent at age 14 years, whereas, boy's non-enrolment is 14 per cent at the same age. At the age of 13, boys' non-enrolment rate is much higher than that of girls; probably boys enter into the labour market from this age. Girl's non-enrolment rate again rises sharply from the age of 15. At the age 17, girl's non-enrolment rate is greater than boys. This possibly reflects the fact that girls have married or have withdrawn from school.

In analysing the enrolment data from the survey we find that enrolment is high among 6-7 years of old children and late enrolment is common. Enrolment data reveal that less than 1 per cent children in the sample have more than 10 years of schooling.

However, years of schooling data and first age of enrolment data are missing for 21.4 per cent and 11.5 per cent children.

During the survey the children are asked ‘Are you still going to school?’ Only 67.8 per cent children of the total sample respond that they are attending school, while 2.2 per cent children report that they are attending school sometimes. On the other hand, 8.5 per cent children report that they are not going to school. However, for 21.4 per cent children, the information about their schooling is missing. In the sample, 74 per cent children are being educated in a co-education school and average distance of the nearest school from residence is between .25-.5 miles. Around 76 per cent children walk to school in all seasons. About 66 per cent of the children study at the formal public school, while 2.7 per cent children study at formal madrasha⁹ and remaining children receive non-formal education.

Reason for Drop out from School:

For the children not currently attending school the main reason for leaving school has been reported in the data. Table 4 reports the causes of leaving school for 5-17 years old children. Children that dropped out of school (about 8.8 per cent of the total sample) are asked the reason for dropping out from school; 27 per cent leave school because their parents couldn’t afford the expense; 27 per cent do not want to go to school; 13 per cent are deprived of schooling because their labour is essential for household work; and, another 4.2 per cent children leave school because of working in the own farm or for other income generating activities. Another reason for dropping out is that parents are reluctant to send girls to school, which account for 8.3 per cent of total drop out. Many parents in Bangladesh believe that it is not appropriate to send girls to school. Religious beliefs strengthen their view of not sending girls outside their home after a certain age.

4. b. Measurement of Children’s Work

The survey contains a limited range of questions about children’s labour force participation. The survey does not provide any information about how a child allocates his time on paid work, unpaid work and schooling. However, the survey asks children

⁹ A kind of religious school run by government.

who are going to school, approximately how many hours they spend on schooling, and how many hours they are absent from school. Children older than 10 years of age are asked about their activities in the household during the last three days of the survey. This includes household chores, such as, caring for a child, attending a sick person, collection of water, cooking, washing, repairing, and shopping etc. However, there is no information about wage for the children who work. This limits our scope in defining child labour. To classify children's activities, however, we focus on the occupation of children reported by household head. The survey asks question about primary occupation and secondary occupation of all household members. We define child labour on the basis of these two occupations. We define work broadly by including non-wage work and housework.

We consider two occupations as the key indicators to define child work. Work and study are not mutually exclusive categories; as we see in the data, some children are reported attending school, while at the same time they are performing some form of paid or unpaid work. So we create four mutually exclusive categories to define child's activity. These categories are - study only, work only, work and study, neither work nor study. We classify the children, in "study only category", if their primary and secondary occupation is student or they do not have a secondary occupation. Similarly, "work only" category includes those children whose primary and secondary occupation is work or they do not have any secondary occupation but their primary occupation is definitely work. If a child works and attends school as well are included in "work and study" category. Neither work nor study category considers those who are reported as child in the survey. Presumably, they are neither going to school nor engaged in work, although there are in school going age.

The figure 4 shows that only 48 per cent children attend school as their only activity. This represents 50.8 per cent of all boys and 44.1 per cent of all girls (Table 6). As seen from figure 4, another 17 per cent children are engaged in work as their only activity. Table 6 shows that this figure is 19.3 per cent for all boys and 13.4 per cent for all girls. Another 23 percent combine schooling with work.

4. c. A profile of Child Activity from Cross Tabulations

Table 5 presents child activity across gender and age. This table indicates that more boys are working as their main occupation than girls and, in study only category, boys are also higher than girls. However, more girls' combine schooling with work than boys and the rate is 30.7 per cent for girls and 18 per cent for boys. The fact is that most of the girls are engaged in household work along with study. In neither study and nor work category, almost similar portion of boys and girls are included.

Figure 4 shows that 17 per cent children are reported to be engaged in paid or unpaid work. Household work is also included in the work category. Household is a common place for child work in rural Bangladesh. Most of the children are engaged in household work in rural areas, where agricultural work is performed mainly by the male children and household work is mainly performed by the female children. There are about 6 per cent children who are reported to be engaged in household work as their primary activity, where most of the children (about 4.6 per cent of the total children) are female children. In secondary occupation, about 15.4 per cent children, are reported to be performed household work as their secondary job, where 11.8 per cent are female children. Exclusion of household work therefore would seriously underestimate the work commitment of children, particularly for female children, which motivate us to include housework in the definition of child work.

Data from this survey reveals that children begin to work from 5 years of age. Children's work participation increases with the age. Particularly, from 12 years old, work participation rate increases sharply, and school attendance falls increasingly. Increasing trend of children's work participation with the age is because as children grow up their potential earning and opportunity cost of schooling increase with the age. School attendance is higher among 6-11 years old. On the other hand, neither schooling nor working children are prominent among the younger children aged from 5-11 years. Combining school with work also increases with the age up to 15 then decreases.

5. a. Empirical model and Estimation Issues

The multinomial logit model is used to estimate simultaneously the determinants of 'work', 'study', combining both, or doing neither.

Let Y_i denote the polytomous variable with multiple unordered categories. Suppose there are j mutually exclusive categories and $P_{i1}, P_{i2}, \dots, P_{ij}$ are the probabilities associated with j categories. In this case, we have four categories ($j = 4$);

$j = 0$ If the child attends school only,

$j = 1$ If child works and attends school,

$j = 2$ If the child neither work nor study,

$j = 3$ If the child works only.

Here, we consider study as reference category. These choices are associated with the following probabilities:

P_{i0} = probability of study (not working)

P_{i1} = probability of combining study and work

P_{i2} = probability of neither work nor study

P_{i3} = probability of work (not attending school).

$$P_r(y_i = 0|x_i) = P_{i0} = \frac{1}{1 + \exp(x'_i\beta_1) + \exp(x'_i\beta_2) + \exp(x'_i\beta_3)},$$

$$P_r(y_i = 1|x_i) = P_{i1} = \frac{\exp(x'_i\beta_1)}{1 + \exp(x'_i\beta_1) + \exp(x'_i\beta_2) + \exp(x'_i\beta_3)},$$

$$P_r(y_i = 2|x_i) = P_{i2} = \frac{\exp(x'_i\beta_2)}{1 + \exp(x'_i\beta_1) + \exp(x'_i\beta_2) + \exp(x'_i\beta_3)},$$

$$P_r(y_i = 3|x_i) = P_{i3} = \frac{\exp(x'_i\beta_3)}{1 + \exp(x'_i\beta_1) + \exp(x'_i\beta_2) + \exp(x'_i\beta_3)}$$

where β_1, β_2 and β_3 are the covariate effects of response categories study and work, neither work nor study and work only respectively with reference category study ($j = 0$) where $\beta_0 = 0$.

In general, for an outcome variable, Y_i with j categories, the probability can be modelled as:

$$P_r(y_i = j|x_i) = P_{ij} = \frac{\exp(x'_i\beta_j)}{1 + \sum_{j=1}^{j-1} \exp(x'_i\beta_j)} \text{ for } j > 0$$

and

(2)

$$P_r(y_i = 0|x_i) = P_{i0} = \frac{1}{1 + \sum_{j=1}^{j-1} \exp(x_i' \beta_j)} .$$

Now, we estimate the above model for the sample size n. Each of n individuals falls into one of the j categories, with the probabilities given by (2). Let x_i be the vector of explanatory variables x for individual i. Thus for a model of k covariates, a total of $(k+1)*(j-1)$ parameters are to be estimated. Then we use x_i to see the propensity of i towards j.

5. b. Estimation

In empirical analysis, time use by children in different activities is used as dependent variable. Time use is represented by a variable taking value 0 if the child is reported attending school; 1 if the child attends school and works, 2 if child neither works nor attends school; and, 3 if the child works only. Explanatory variables used for the empirical investigation of the time use of school-age children mostly reflect the covariates in eq (9) of section 2. The vector of Z_i in theoretical model is represented by the age and education of the parents i in individual level and in community level, it is represented by the different facilities in the community. Regional dummies are used to capture the different characteristics of the community. Father and mother human capital, h_f and h_m respectively, are represented by their level of education and occupation. Distance of primary school and availability of secondary school capture the technological shifter, α in eq (9) that turns the education of children into their human capital. Distance to school also measures opportunity cost of schooling. Availability of school in the community reduces the cost of educational input. In absence of non-labour income data, homestead area owned by the house is used as a proxy of non labour income. The numbers of children in the household between 0-4 years of age are used as a measure of pre-school children; while the amount operated land is used for k in eq (9) of section 2.

Since, earlier studies identify that child characteristics and household characteristics are important determinants for child labour and schooling decision. We therefore, include some child and household wide characteristic variables, such as total member of the household, and age, age squared, sex of the child and whether the child is

son or daughter (versus other relatives) of the head of household, although they are not included in the theoretical model.

6. Empirical Findings

To model the child's activity choices a multinomial logit model is estimated for the probability that a child will "work only", or combine both, or be in "neither" category as against "study only". The estimated coefficient, t-statistics and odd ratios of multinomial logit are reported in the Table 6-8. Table 6 presents the results of all children, while Table 7 and Table 8 display the result for boys and girls separately. We estimate the sample separating by gender to see if there are any gender specific impacts on child labour decision.

Child's characteristics

Child characteristics, such as age, gender, and whether the child is son/daughter of the head, appear to be important determinants of child labour and schooling decision. First let us consider the effect of age. The age coefficient is found to be significant for all categories ("work and study", "neither" and "work") as well as the boys' sample. The probability of working and 'combining work and study' increases with age¹⁰. One explanation of this result is that older children either have completed their studies or failed to continue. It may be also the case, as children grow up they acquire more experience and more human capital which creates a prospect of higher wages that induces them to leave school. However, insignificant age coefficient of the 'work only' category in girls sample implies that age has no impact on the probability of working for girls (Table 8). The significant negative age coefficient of 'neither work nor study' indicates that younger children are more likely to be in neither category. This finding tells a different story in case of Bangladesh whereas the literature in other developing countries finds that older children are more likely to be in neither category¹¹. Levison et al.'s

¹⁰ Grootert's (1999) study in Cote-d'Ivoire and Cigno and Rosati's (2002) study in India find the same effect on the probability of combining work with study and on the probability of 'neither work nor study'. Cigno and Rosati, however, find mix effect of age on the probability of full-time work. Their findings show that probability of full time working decreases for the children up to 8 years old, then increases with the age up to age 12, then decreases again.

¹¹ See for example, Blunch and Verner (2000)

(2001) study in Mexico find no significant effect of age on the probability of combining work and study and on the probability on “neither work and nor study”.

Table 6-8 confirm that if a child is the son or daughter of the head of household, he or she is more likely to specialise in study and less likely to specialize in work. This can be explained differently that if a child is not the son or daughter of the head, his or her odds to specialise in work are 9.25 times as greater as that of a child of the head of household. This coefficient shows significant positive effect on the probability of combining work and study, which implies that son and daughter of the household head is also likely to combine study and work as opposed to the children of other relatives of the household head. This reflects that household head favours his/her own child with schooling or at least to combine school and work.

Now let us turn into gender coefficient. Although the gender coefficient has no effect on the probability of working and on the probability that a child will neither study nor work (Table 6); it has significant effect on the probability of combining study and work. Female children are more likely to combine study with work, since the odds of combining study with work for girls are nearly 3 times as those of boys. This result is not surprising, as we include housework in the definition of work. It is thus consistent with the finding of Levison, et al.’s (2001) who also find that if housework is included in the measurement of work, then, girls are 14.1 per cents points more likely than boys to combine work and study. However, other studies (for example, Grootert, 1999; Maitra and Roy, 2002; Cigno and Rosati, 2002) that use conventional definition of work find that girls are less likely than boys to combine work and study.

Parents Characteristics

Among parental characteristics, both the education of father and mother and the occupation of father, have the greatest impact on child labour and schooling decision. Consistent with the theoretical assumption, empirical findings also reveal that the higher level of education of parents’ increases the likelihood that a school-age child will specialise in study relative to the likelihood that the child will “work only” or do neither. The mother education further confirms that the schooling will be full-time rather than part-time (Table 6, Table 7); the girl’s sample, however, does not agree with this result

(Table 8). The impact of father education is higher than that of mother in case of the probability that a child will “study only” rather than “work only”. On the contrary, father’s education has a very marginal negative effect on the decision on combining study with work in the boy sample. Both the father’s and mother’s education significantly reduces the probability that a school-age child will be in neither category. However, all these findings confirm the theoretical prediction that parents with higher level of human capital have a better potential income than that of lower educated parents; and thus higher income of parents increase the chance of the children to be in school rather than working.

Among other parental variables, age of the parents is found to be insignificant. Some of the coefficients of occupation variable, however, give significant results. For example, if father’s occupation is trade, then it is more likely for the child to specialise in schooling. This gives the expected results that are predicted in the theoretical model. If a father is engaged in trade then positive income effect dominates to keep the children in the school. On the other hand, if the father of a child is day labourer or wage labourer, then it reduces the probability that the child will ‘study only’ and increases the probability that the child will combine ‘study and work’ or ‘work only’. The mother occupation is found to be insignificant in the combined sample and boys sample. In case of girls, however, having a mother who does housework increases the likelihood that she specialises in schooling (Table 8). If mother does housework, then, it relieves girls from housework and makes it convenient for them to utilise their extra time to study. Parents’ occupations have no impact on the probability of “neither work nor study”.

Household Characteristics:

The number total member in the household raises the probability that a school-age child will “study only” relative to the probability that the child will “work only” or “work and study”, but it has no effect on the probability of “neither work nor study”. An increase in the number of pre-school children reduces the likelihood of full-time schooling and indicates that schooling will be part-time with work. The effect of the presence of pre-school children on the probability of combining study with work is large for girls (Table 8); but has no impact on boys (Table 7). As the boys sample does not confirm this result, it, therefore, indicates that pre-school children generate housework

that is particularly done by girls. In that case schooling of girls becomes part time instead of fulltime. Theory also assumes that additional number of pre-school child tends to withdraw school-age children from schooling to work by the increased demand for child care time or by the increased cost of raising pre-school children. This study, however, confirms that reduced schooling is incurred by addition demand of child care time rather than increasing cost of raising pre-school children. Hence, the finding suggests that pre-school children generate work for the school-age girls, as they require constant supervision and tending. The empirical result, however, contradicts with the theoretical prediction that the number of school-age children influences the probability of working and schooling, as the impact of the number of school-age children is found insignificant.

Total land area owned by the household does not exhibit significant effect on child labour and schooling decision, where it is statistically significant, for example, on the probability of ‘neither work nor study’, the effect is weak. Table 7, however, shows a slightly higher effect for male children. An increase in the total land increases the probability of schooling and decreases the risk of being in the ‘neither study nor work’ category for male children; but Table 8 shows that an increase in total land raises the probability of combining study with work rather than ‘study only’. However, all these trends suggest that total land holding increases the likelihood towards schooling rather than not studying at all. On the other hand, an increase in operated land is associated with the higher probability of combining study and work relative to ‘study only’. This is consistent with our expectations. Since an additional amount of operated land tends to demand more labour that requires school-age children to be involved with farm work, because land and labour are complementary. As operated land does not show any significant trend to increase the probability of ‘study only’; this result suggests that substitution effect is higher than income effect in case of Bangladesh. Table 8 (girls sample), however, does not support this result. It is probably the case, as boys are more likely than girls to do farming activities along with study. The homestead area gives ambiguous results in the combined sample and boys sample. The girls sample (Table 8), however, provides expected result. An additional increase in homestead area is associated with the probability that the school age children will specialise in study. However, the

odds ratio is unity for all land coefficients which denies strong link between land ownership and child labour.

Cost of schooling variables are found to be insignificant, but where significant, it gives an unexpected sign. The regional dummies indicate that children residing in Mymensing are more likely to specialise in study or to be in neither category, whereas the odds of working for children from Sauria are 1.68 times higher as opposed to children from Mymensingh. On the other hand, the chance of undertaking neither work nor study is higher for children living in Jessore.

7. Concluding Remarks

This paper analyses the incidence and determinants of child labour and school attendance in Bangladesh applying a new data set. The results suggest that parental characteristics and the socio-economic status of the household are important determinants of child labour along with child's own characteristics.

The empirical findings provide evidence that the education of parents significantly increases the probability that a school-age child will specialise in study. Empirical results also show that if the father is employed in a vulnerable occupation, for example, day-labour or wage-labour, it raises the probability that a child will work full time or combine work and study. An increase in the number of total household members is associated with a higher probability of schooling.

Most of the literatures on child labour in developing countries find that boys are more likely to combine study and work. However, the significant and positive gender coefficient of this paper suggests that girls are more likely than boys to combine schooling with work in Bangladesh. Most of the girls in study areas are engaged in household work that allows them to combine school and work; because household work is more flexible than formal wage earning jobs. Another interesting finding of this study is that the analysis of the data shows that girl's enrolment rate is higher than boys at all ages. This is probably because there is an on going education subsidy program for girls education in Bangladesh that attracts parents to send their daughter to school. This may be one reason why we have not found enough evidence of gender difference in child labour and school attendance. Another important aspect needs to be reported here that we

define children as students if they are between 5-17 years of age and still attending school. However, we are not able to measure school attainment for those children in this paper. If it could be measured accurately then the actual school attainment across boys and girls could be explored. These discussions arise because formal statistics show that literacy rate is still high among male population in Bangladesh.¹² Therefore an exploration of this issue is a potential avenue for further research.

The findings of this study provide important directions for policy makers. As we see working is common among the older children, therefore, policy makers should target the older children that can not continue with school for various reasons and the older girls that are deprived from schooling as a result of early marriage. More attention should be paid to children of less educated and poor parents (estimated by occupation); as they can not afford schooling. We also find that the children who are not the sons and daughters of the head of household are more likely to work than the sons/ daughter of the household head. This may reflect the fact that if the household head is resource constrained then it is more likely for him to choose his own child for schooling first. This finding further sheds light on the relationship of child labour and poverty. Although this study could not provide any specific direction on the conjunction of child labour and household welfare, it tries, however, to indicate that child labour is negatively related with household income and welfare that is proxied by both the occupation and education of parents.

Empirical evidence shows that some study areas lag behind others regarding the school attendance of children. Therefore, policy makers and NGO workers should target those areas where school enrolment is low compare to other areas. Another important conclusion can be drawn from this study: if there is no subsidy program for girls' education then girls who are combining school and work would more likely to be found in work or in 'neither' children. Moreover, appropriate policy can shift children who are both attending school and working toward schooling as their primary activity. Hence, the government of Bangladesh should continue the education subsidy program while more focus should be given to its proper and fruitful implementation.

¹² The adult illiteracy rate for males and females is 47.7 and 70.1 respectively (source: World Bank, 2000).

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Table 1: Characteristics of the Micro Nutrient and Gender Study (First Round), 1996-97.

Characteristics	Saturia	Mymensingh	Jessore	All
Households	313	320	324	957
Individuals	1680	1923	1661	5264
Children (0-17)	726	827	703	2256
Children of the Household Head	581	657	589	1827
Children (5-17)	554	625	561	1740
Children of the Household Head	459	503	476	1438

Source: MNGS in Bangladesh, 1996-97.

Table2: Variable names and definitions, means and standard deviations (standard deviation in parentheses under means) of variables.

Variables Name	Definition	Total (N=1628)	Boys (N=993)	Girls (N=635)
<i>Child Characteristics</i>				
Female	Gender of child(1 if Female, 0 otherwise)	.39 (.48)	0 (0)	1 (0)
Son/Daughter	1 if son/ daughter of the Head, 0 otherwise	.85 (.35)	.86 (.34)	.83 (.36)
Age	Age of Child	11.12 (3.57)	11.27 (3.59)	10.88 (3.54)
Age squared	Age of Child, squared	136.51 (79.46)	140.04 (80.33)	131 (77.82)
<i>Household Characteristics</i>				
Children (5-17)	Number of Children in Household 5-17	2.84 (1.26)	2.77 (1.28)	2.95 (1.23)
Children (0-4)	Number of Children in Household 0-4	.53 (.72)	.49 (.71)	.59 (.73)
Total member	Number of Total Member in Household	6.57 (2.74)	6.43 (2.69)	6.79 (2.81)
Total land	Total land measured in decimal	175.59 (247.29)	173.73 (234.00)	178.43 (266.93)
Operated land	Operated land measured in decimal	113.86 (156.33)	114.85 (154.86)	112.32 (158.71)
Homestead	Homestead measured in decimal	21.26 (24.14)	21.41 (23.69)	21.04 (24.85)
<i>Parental Characteristics</i>				
Father age	Age of father	46.86 (10.57)	47.01 (10.75)	46.61 (10.28)
<i>Father's Education Dummy</i>				
Illiterate	1 if father is illiterate, 0 otherwise	.26 (.44)	.26 (.44)	.25 (.43)

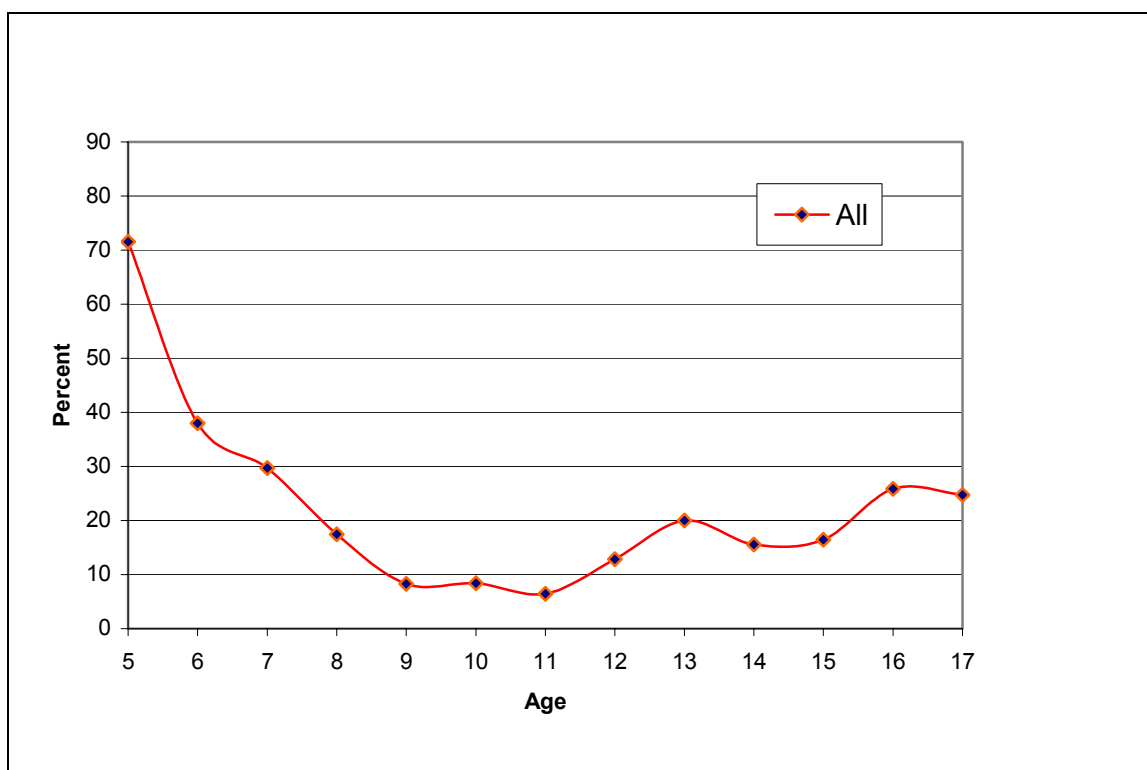
Can sign only	1 if father can sign only, 0 otherwise	.27 (.44)	.27 (.44)	.26 (.44)
Can read only	1 if father can read only, 0 otherwise	.02 (.16)	.02 (.16)	.02 (.16)
Can read and write	1 if father can read and write, 0 otherwise	.43 (.49)	.43 (.49)	.45 (.49)
<i>Father's Occupation Dummy</i>				
Farming	1 if father's occupation is agriculture, 0 otherwise	.48 (.49)	.48 (.49)	.47 (.49)
Service	1 if father's occupation is service, 0 otherwise	.11 (.32)	.11 (.32)	.12 (.33)
Trade	1 if father's occupation is business, 0 otherwise	.16 (.37)	.16 (.37)	.16 (.37)
Day/wage labourer	1 if father is day labour and wage labour, 0 otherwise	.19 (.39)	.19 (.39)	.21 (.40)
Other Occupation	1 if father's occupation is agriculture, 0 otherwise	.03 (.18)	.03 (.18)	.02 (.15)
Mother Age	Age of mother	38.01 (9.21)	38.12 (9.27)	37.84 (9.12)
<i>Mother's Education Dummy</i>				
<i>Illiterate</i>	1 if mother is illiterate, 0 otherwise	.36 (.48)	.39 (.48)	.31 (.46)
Can sign only	1 if mother can sign only, 0 otherwise	.36 (.48)	.34 (.48)	.39 (.48)
Can read only	1 if mother can read only, 0 otherwise	.04 (.20)	.03 (.17)	.05 (.23)
Can read and write	1 if mother can read and write, 0 otherwise	.23 (.42)	.23 (.42)	.23 (.42)
Mother's Occupation	1 if mother does housework, 0 otherwise	.94 (.22)	.94 (.23)	.95 (.21)
<i>Cost of Education</i>				
Distance to primary school	Distance to the nearest primary school	.25 (.43)	.28 (.46)	.20 (.38)
Secondary school	1 if there is any secondary school in the village, 0 otherwise	.87 (.33)	.86 (.34)	.88 (.31)
<i>Region Dummy</i>				
Saturia	1 if household resides in Saturia, 0 otherwise	.31 (.46)	.39 (.48)	.20 (.40)
Mymensingh	1 if household resides in Mymensingh, 0 otherwise	.36 (.48)	.33 (.47)	.41 (.49)
Jessore	1 if household resides in Jessore, 0 otherwise	.31 (.46)	.27 (.44)	.37 (.48)

Table 3: Enrolment in Primary School (1997-2001)

Year	Total(in million)	Boys (percent)	Girls (percent)
1997	180.3	51.9	48.1
1998	183.6	52.1	47.8
1999	176.2	51.8	48.6
2000	176.7	51.3	48.7
2001	176.6	50.9	49.1

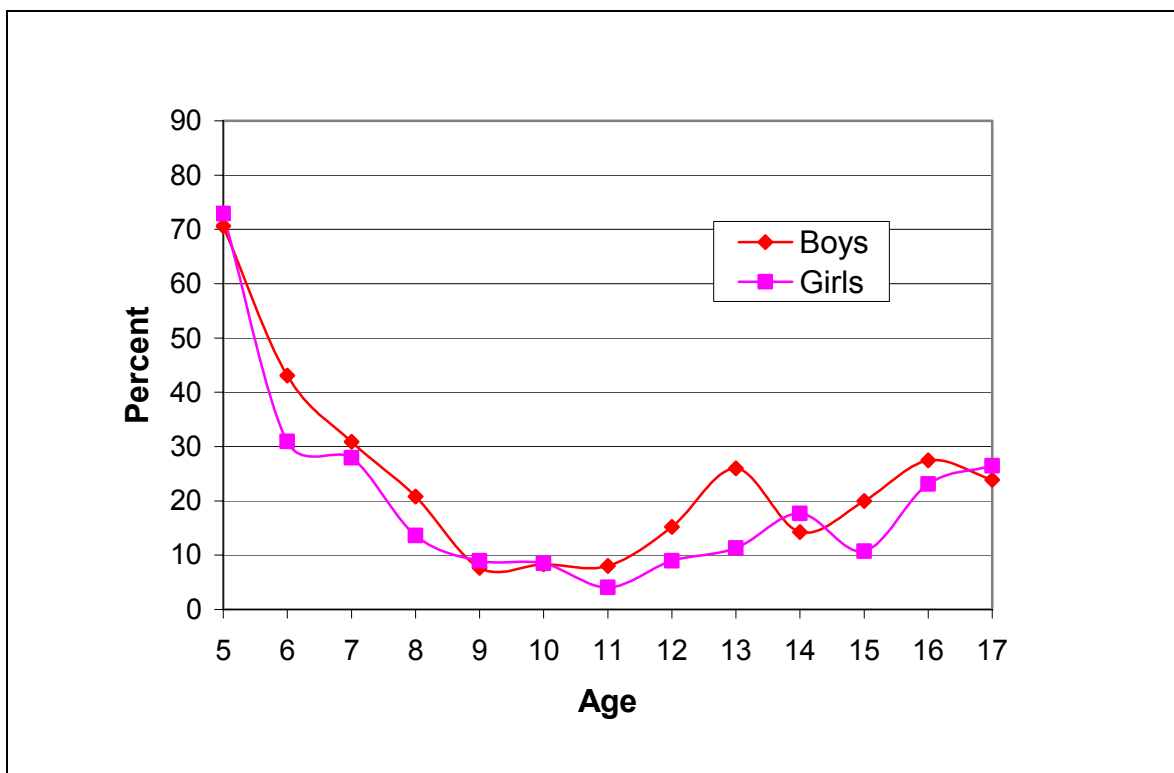
Source: Primary and Mass education Division.

Figure 1: Children not enrolled in School by Age



Source: MNGS in Bangladesh, 1996-97.

Figure 2: Children not Enrolled in School by Age and Gender



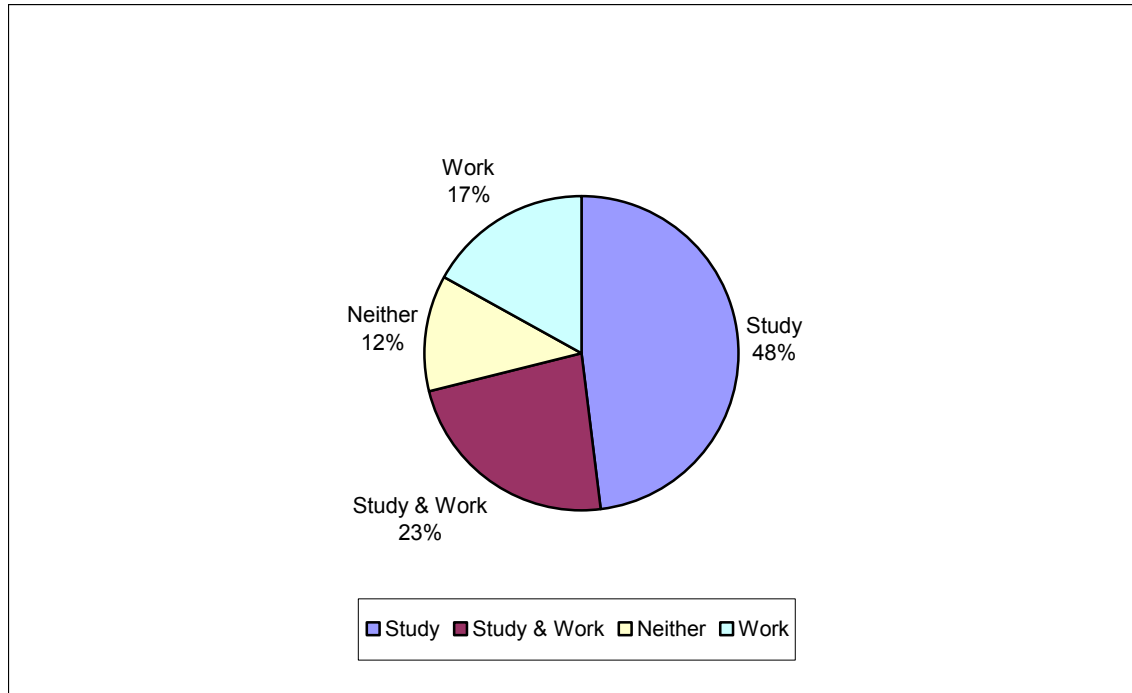
Source: MNGS in Bangladesh, 1996-97.

Table 4: Reason for Leaving School.

Cause	Percent
Couldn't Afford	27.1
Sickness	4.2
Needed for Housework	13.2
Needed for Own Farm	.7
Needed for Income Generating Activities	3.5
School too Faraway	6.9
Not Appropriate to send girls to School	8.3
Did not Want to Go	27.1
Other Reason	9.0
Total	100

Source: MNGS in Bangladesh, 1996-97.

Figure 3: Distribution of Children across Four Categories (%).



Source: MNGS in Bangladesh, 1996-97.

Table 5: Activity Status of Children across Gender and Age (in per cent).

	Study Only	Work and Study	Neither	Work Only	Total
Gender					
Boys	50.8	18.0	11.9	19.3	100.0
Girls	44.1	30.7	11.8	13.4	100.0
Age					
5	26.9	.9	72.2	0.0	100.0
6	59.4	1.0	39.6	0.0	100.0
7	60.0	8.2	30	1.8	100.0
8	77.7	5.1	16.2	0.0	100.0
9	79.3	10.3	7.0	3.4	100.0
10	69.7	22.1	4.1	4.1	100.0
11	58.8	35.3	2.5	3.4	100.0
12	50.6	33.1	0.0	16.3	100.0
13	35.0	37.6	0.0	28.4	100.0
14	37.6	39.0	0.0	23.4	100.0
15	24.6	37.0	0.0	38.4	100.0
16	23.1	30.0	0.0	46.9	100.0
17	17.2	26.8	0.0	56.0	100.0

Source: MNGS in Bangladesh, 1996-97.

Table 6: Multinomial logit estimates for all children (The reference category is Study only).

Variable Names	<i>Study and Work</i>			<i>Neither</i>			<i>Work</i>		
	Coefficient	t-statistics	Odd-ratio	Coefficient	t-statistics	Odd-ratio	Coefficient	t-statistics	Odd-ratio
Constant	-9.314	-6.122		7.988	4.201		-11.972	-4.197	
<i>Child Characteristics</i>									
Female	1.037	6.659	2.82	-.017	-.078	0.983	-.174	-.815	.840
Son/Daughter	.595	1.970	1.81	-.158	-.358	0.853	-2.221	-8.075	.108
Age	1.156	5.069	3.177	-1.43	-3.603	0.239	1.451	3.500	4.267
Age squared	-.031	-3.379	.969	.034	1.407	1.034	-.029	-1.884	.971
<i>Household Characteristics</i>									
Children (5-17)	.039	.475	1.039	.223	1.759	1.249	-.010	-.114	.990
Children (0-4)	.340	2.760	1.404	-.061	-.326	0.940	.102	.619	1.107
Total member	-.130	-2.641	.87	.028	.397	1.028	-.112	-1.937	.894
Total land	.000	1.038	1	-.001	-1.656	0.999	-.000	-.084	1
Operated land	.002	1.950	1.002	-.002	-1.292	.998	-.000	-.026	1
Homestead	-.006	-1.622	.994	.019	2.389	1.019	-.005	-1.208	.990
<i>Parents Characteristics</i>									
Father age	-.017	-1.017	.983	-.022	-.822	0.978	.029	1.577	1.029
<i>Father's Education (ref.: Illiterate)</i>									
Can sign only	.006	.028	1.006	-.790	-2.755	0.453	-.607	-2.296	.544
Can read only	.540	1.112	1.716	-1.064	-1.279	0.345	.242	.387	1.273
Can read and write	-.358	-1.629	.699	-1.205	-3.845	0.299	-.902	-3.369	.405
<i>Father Occupation (ref.: Farming)</i>									
Service	-.364	-1.437	.694	.110	.248	1.116	-.438	-1.291	.645
Trade	-.565	-2.449	.568	.229	.726	1.257	.006	.023	1.006
Day/wage labourer	.395	1.774	1.484	.388	1.194	1.474	.995	3.452	2.704
Other Occupation	-.276	-.621	.758	-.069	-.122	0.933	.264	.533	1.302

Mother Age	.015	.736	1.015	.003	.084	1.003	-.020	-.916	.980
<i>Mother Education (ref.: Illiterate)</i>									
Can sign only	-.227	-1.251	.796	-.399	-1.566	.670	-.609	-2.632	.543
Can read only	-.299	-.738	.741	-.798	-1.250	.450	-.611	-1.094	.542
Can read and write	-.439	-1.922	.644	-1.500	-3.966	.223	-.802	-2.726	.448
Mother's Occupation	-.332	-1.019	.717	-.087	-.164	.916	.063	.156	1.065
<i>Cost of Education</i>									
Distance to primary school	-.188	-1.040	.828	.279	1.057	1.321	-.0705	-.322	.932
Secondary school	.003	.013	1.003	-.033	-.093	.967	.410	1.278	1.506
<i>Region Dummies (ref.: Sataria)</i>									
Mymensingh	.061	.321	1.062	1.117	3.793	3.055	-.523	-2.155	.592
Jessore	.045	.238	1.046	1.284	4.083	3.611	-.257	-.105	.773
<i>Chi squared</i>	1471.672 (d.f.81)								
<i>Pseudo R-squared</i>	.363								
<i>Number of Observations</i>	1628								

Table 7: Multinomial Logit Estimates for Boys (The reference category is Study only).

Variable Names	<i>Study and Work</i>			<i>Neither</i>			<i>Work</i>		
	Coefficient	t-statistics	Odd-ratio	Coefficient	t-statistics	Odd-ratio	Coefficient	t-statistics	Odd-ratio
Constant	-8.193	-3.762		7.558	3.155		-12.136	-3.559	
<i>Child Characteristics</i>									
Son/Daughter	.673	1.459	1.960	.119	.202	1.126	-2.128	-6.162	0.119
Age	.931	2.904	2.537	-1.39	-2.794	.249	1.401	2.840	4.059
Age squared	-.022	-1.749	.978	.032	1.071	1.032	-.028	-1.514	.972

<i>Household Characteristics</i>									
Children (5-17)	.130	1.133	1.138	.101	.640	1.106	.011	.093	1.011
Children (0-4)	.014	.081	1.014	-.061	-.250	.940	-.028	-.140	.972
Total member	-.068	-.969	.934	.020	.215	1.020	-.088	-1.197	.915
Total land	-.000	-.355	1	-.003	-2.132	.997	-.000	-.800	1
Operated land	.002	1.974	1.002	-.000	-.431	1	.000	.279	1
Homestead	-.002	-.283	.998	.028	2.995	1.028	-.003	-.482	.997
<i>Parents Characteristics</i>									
Father age	-.031	-1.330	.969	-.014	-.401	.986	.034	1.520	1.034
<i>Father's Education (ref.: Illiterate)</i>									
Can sign only	-.176	-.630	.838	-.877	-2.370	.416	-.655	-2.077	.519
Can read only	.500	.809	1.648	-.850	-.846	.427	.284	.369	1.328
Can read and write	-.554	-1.874	.574	-1.028	-2.591	.357	-.917	-2.776	.399
<i>Father Occupation (ref.: Farming)</i>									
Service	-.470	-1.277	.625	.585	1.015	1.794	-.659	-1.618	.517
Trade	-.912	-2.732	.401	.398	.970	1.488	-.164	-.497	.848
Day/wage labourer	.574	1.916	1.775	.458	1.092	1.580	.894	2.544	2.444
Other Occupation	.546	.011	1.726	-.347	-.482	.706	.590	1.083	1.803
Mother Age	.019	.648	1.019	.001	.029	1.001	-.021	-.793	.979
<i>Mother Education (ref.: Illiterate)</i>									
Can sign only	-.373	-1.541	.688	-.580	-1.753	.559	-.579	-2.087	.560
Can read only	.056	.094	1.057	-.810	-.830	.444	-.107	-.141	.898
Can read and write	-.710	-2.209	.491	-1.692	-3.539	.184	-.624	-1.799	.535
Mother's Occupation	.000	.001	1	.109	.173	1.115	.691	1.406	1.995
<i>Cost of Education</i>									
Distance to primary school	-.296	-1.288	.743	.266	.845	1.304	-.292	-1.122	.746
Secondary school	-.002	-.008	.998	.127	.280	1.135	.137	.382	1.146

Region Dummy (ref.: Sauria)									
Mymensingh	.466	1.825	1.593	.668	1.808	1.950	-.360	-1.274	.697
Jessore	-.175	-.609	.839	.938	2.302	2.554	-.403	-1.325	.668
<i>Chi squared</i>	863.2037 (d.f.78)								
<i>Pseudo R-squared</i>	.355								
<i>Number of Observations</i>	993								

Table 8: Multinomial Logit Estimates for Girls (The reference category is Study only).

Variable Names	<i>Study and Work</i>			<i>Neither</i>			<i>Work</i>		
	Coefficient	t-statistics	Odd-ratio	Coefficient t	t-statistics	Odd-ratio	Coefficient	t-statistics	Odd-ratio
Constant	-9.593	-4.126		9.356	2.549		-11.77	-2.164	
<i>Child Characteristics</i>									
Son/Daughter	.567	1.264	1.762	-.400	-.534	.670	-2.453	-4.749	.086
Age	1.306	3.659	3.691	-1.554	-1.948	.211	1.216	1.525	3.373
Age squared	-.035	-2.324	.965	.036	.694	1.036	-.015	-.482	.985
<i>Household Characteristics</i>									
Children (5-17)	-.031	-.237	.969	.397	1.657	1.487	-.010	-.055	.990
Children (0-4)	.850	4.153	.427	-.060	-.181	.941	.345	1.029	1.411
Total member	-.212	-2.691	1	.090	.618	1.094	-.174	-1.608	.840
Total land	.001	1.974	1	.000	.054	1	.001	.972	1
Operated land	.000	.743	.987	-.004	-1.281	.996	.000	.235	1
Homestead	-.013	-2.218	1.007	.005	.348	1.005	-.016	-1.800	.984
<i>Parents Characteristics</i>									
Father age	.007	.250	1.300	-.024	-.514	.976	.012	.289	1.012
<i>Father's Education (ref.: Illiterate)</i>									
Can sign only	.263	.735	1.300	-.760	-1.539	.467	-.579	-1.068	.560

Can read only	.228	.283	1.256	-.701	-.419	.496	.305	.270	1.356
Can read and write	-.051	-.143	.950	-1.60	-2.909	.201	-.918	-1.805	.399
<i>Father Occupation (ref.: Farming)</i>									
Service	-.360	-.906	.697	-.584	-.692	.557	.460	.690	1.584
Trade	-.370	-.985	.690	.181	.342	1.198	.432	.744	1.540
Day/wage labourer	.363	1.014	1.437	.371	.674	1.449	1.745	2.946	5.725
Other Occupation	-1.91	-1.787	0.148	.555	.577	1.741	-29.13	.000	
Mother Age	.014	.433	1.014	-.013	-.220	.987	.002	.033	1.002
<i>Mother Education (ref.: Illiterate)</i>									
Can sign only	-.165	-.533	.847	-.172	-.388	.841	-.781	-1.685	.458
Can read only	-.995	-1.672	.369	-1.060	-1.067	.346	-1.355	-1.485	.257
Can read and write	-.147	-.396	.863	-1.496	-2.184	.224	-1.163	-1.880	.312
Mother's Occupation	-1.341	-2.185	.261	-.876	-.846	.412	-1.568	-1.781	.208
<i>Cost of Education</i>									
Distance to primary school	-.008	-.026	0.992	-.038	-.071	.962	.647	1.419	1.909
Secondary school	.298	.791	1.347	-.108	-.173	.897	1.944	2.085	6.986
<i>Region Dummy (ref.: Sataria)</i>									
Mymensingh	-.931	-2.648	.394	1.90	3.578	6.685	-.955	-1.657	.384
Jessore	.305	1.051	1.356	1.79	3.231	5.989	.987	2.099	2.683
<i>Chi squared</i>	671.4555 (d.f. 78)								
<i>Pseudo R-squared</i>	.425								
<i>Number of Observations</i>	635								

