Schooling and Educational Attainment: Evidence from Bangladesh*

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Abstract

Education and human capital accumulation are essential components of economic development. This paper attempts to identify some of the individual and household level characteristics that affect the demand for schooling in Bangladesh. We examine (1) current enrolment status of children aged $6-12$ and (2) the highest grade attained for children aged $13-24$. The first is estimated using a standard probit model and the second using a censored ordered probit model. Estimation results show that there is no gender differential in current enrolment status but grade attainment is higher by girls, relative to boys. Increases in the permanent income of the household is always associated with an increase in educational attainment. Parental education generally has a positive and statistically significant effect on the educational attainment of children and mother's education has a stronger effect on both school enrolment and grade attainment of children compared to father's education.

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1 Introduction:

Education and investment in human capital is universally recognized as an essential component of economic development in any country. Education endows individuals with the means to enhance their skills, knowledge, health and productivity and also enhances the economy's ability to develop and adopt new technology for the purpose of economic and social development. Given these benefits from education, increasing education levels is an important concern for policy makers everywhere. The importance of education cannot be over emphasized in a country like Bangladesh. In 1999 the illiteracy rate in Bangladesh was 47% (as a percentage of the population over 15) and the population growth rate was 1.6%. This, combined with the low per capita GDP ($300), has meant that a very low proportion of the total GNP is spent on education. Under these circumstances increasing the school enrollment rate of and increasing the level of schooling attainment the school age population is of utmost importance to policy makers in Bangladesh.

Evidence shows that supply side policies aimed at improving educational attainment of children have generally been less than successful in developing countries. The important task facing policy makers is therefore attempting to increase the demand for education of the children. In this paper I examine the factors that affect the demand for child education in Bangladesh.

Ideally any analysis of the determinants of schooling should account for the final level of schooling that an individual attains and relate this to information on the environment in which this individual grew up. However most survey data sets from developing countries

are non-retrospective and provide very little information on the environment in which the adult grew up. There is therefore very little information on the factors that typically affect educational attainment. For example very little information is available on household income, parental characteristics and distance to schools at the time the adult was in the school going age group. Researchers have therefore concentrated on the determinants of child schooling. This has two important advantages. First using children as the unit of observation allows one to use available information on parental, household and community characteristics and hence information on the environment in which schooling decisions are being made. Second, many developing countries are experiencing rapid educational development and changes to the educational structure. Additionally there are significant birth cohort differences. From the point of view of policy it is therefore essential to examine the determinants of child schooling.

Educational attainment is examined using two different variables: current school enrolment and the highest level of schooling (or highest grade) attained. Analysis of the current level of enrolment is fairly standard and is conducted using a probit model. Estimation of the highest level of schooling attained is however more complicated. Surveys typically measure schooling attained by the years of education attained (or the highest class completed). This leads to several problems. First, even though desired schooling might be a continuous variable, the researcher only observes only discrete years of schooling. Second, data on education attainment from developing countries is often characterized by a large mass point at zero years of education and similar probability spikes at primary and secondary school completion levels, where progress to the next level is often impeded by

school fees and entrance requirements.[1] OLS estimation is therefore inappropriate under this set up, even though the literature has often used OLS to estimate the determinants of child schooling.[2] The literature has therefore used ordered probit/logit models to estimate the highest grade attained (Tansel [1997], Dreze and Kingdon [2001]). While this approach takes into account the discreteness of the data and the probability spikes, it fails to account for the censoring in the data arising from the fact that some children are enrolled in school at the time of the survey. One can argue that the desired level of schooling equals the completed years of education for the children that are not currently enrolled in school. However for children that are currently enrolled in school, the desired years of schooling clearly exceeds the years of completed schooling. These observations are therefore right censored. We therefore use a censored ordered probit model to estimate the highest level of schooling attained. Ignoring this right censoring in the data implies that the estimates will not be consistent.

The rest of the paper is organized as follows. Section 2 describes the estimation methodology. Section 3 describes the data set and presents selected descriptive statistics. Section 4 discusses the results. Finally Section 5 concludes.

[1] In the Bangladesh MHSS dataset that we use for the purposes of this paper, nearly 26% of all children (27% of girls and 25% of boys) have no education. A look at the distribution of completed schooling for individuals aged 15 - 24 shows that there are probability spikes at Class 5 (year of completion of primary schooling) and Classes 9 and 10 (year of completion of secondary schooling).

[2] See for example Barros and Lam [1992], Behrman and Wolfe [1987], Handa [1996], Jamison and Lockheed [1987], Knight and Shi [1996] and Parish and Wills [1993].

2 Methodology:

Let us assume that parents make decisions regarding the educational attainment of their children and parental utility is derived from both market consumption goods that are purchased from the market (X) and home-produced or non-market goods (Z). The educational outcome of the child may be regarded as a home produced good. The non-market good Z is produced according to the following production function

$$Z = Z\left(X; \Omega\right) \tag{1}$$

where Ω denotes the household's production efficiency parameter. The utility of the mother (m) and the father (f) is denoted by U^{m} and U^{f} and their reservation utility levels are $\overline{U}^{\mathsf{m}}$ and $\overline{U}^{\mathsf{f}}$. The reservation utility level of $i\,(i = m, f)$ depends on the vector of prices p, unearned or asset incomes A_{i} and a set of extrahousehold environmental parameters α_{i} (see McElroy [1990]), so that

$$\overline{U}^{\mathsf{i}} = \overline{U}^{\mathsf{i}}\left(p, A_{\mathsf{i}}; \alpha_{\mathsf{i}}\right); i = m, f \tag{2}$$

The two parents (m and f) then choose X and Z to maximize

$$V = \left[U^{\mathsf{m}}\left(X, Z\right) - \overline{U}^{\mathsf{m}}\left(p, A_{\mathsf{m}}; \alpha_{\mathsf{m}}\right)\right] * \left[U^{\mathsf{f}}\left(X, Z\right) - \overline{U}^{\mathsf{f}}\left(p, A_{\mathsf{f}}; \alpha_{\mathsf{f}}\right)\right] \tag{3}$$

subject to the full income constraint

$$pX = w_{\mathsf{m}} T_{\mathsf{m}} + w_{\mathsf{f}} T_{\mathsf{f}} + A_{\mathsf{m}} + A_{\mathsf{f}} \tag{4}$$

and the household production function given by equation (1). Here w_{i} is the wage rate for individual i and T_{i} is the time endowment for individual i.

As a solution to this problem we get a reduced form demand equation for children's education (a Z-good), which depends on prices (p), individual unearned income (A), the household production efficiency parameter (Ω) and variables that reflect the bargaining power of each member within the household, so that

$$S^* = S^*\left(p, A_{\mathsf{m}}, A_{\mathsf{f}}; \alpha_{\mathsf{m}}, \alpha_{\mathsf{f}}, \Omega\right) \tag{5}$$

An empirical version of equation (5) is

$$S^* = S^*\left(p, \phi; \Omega\right) \tag{6}$$

where ϕ is the set of variables reflecting each member's relative authority and power within the household that affects the demand for goods. The set of variables in ϕ will include unearned income of the different members (A_{i}) and the extra environmental parameters (α_{i}). From an empirical point of view, any variable that reflects relative authority or bargaining power within the household is a candidate for ϕ. In the actual estimation I will use the highest education attained by the mother and the father as the relevant measures of ϕ. Two different versions of equation (6) are estimated.

This paper uses two alternative measures of educational attainment: current school enrolment and the highest grade attained. Current school enrolment is a dichotomous indicator variable and is estimated using a probit model.

$$SCHCURR = \begin{cases} 1 \text{ if the child is currently enrolled in school} \\ 0 \text{ otherwise} \end{cases} \tag{7}$$

The analysis of the highest grade attained is complicated by the problems of discreteness of the completed years of schooling, the problem of probability spikes and right censoring.

A censored ordered probit model is therefore used for estimation purposes.

The censored ordered probit model was originally developed by King and Lillard [1987] and later used by Glewwe and Jacoby [1992], Alderman et. al. [1995], Behrman et. al. [1997] and Holmes [1999]. The essential idea behind the censored ordered probit model is as follows: Define S^* as the desired level of schooling, which is a continuous variable depending on a set of explanatory variables X and a residual term ε so that

$$S^* = \beta X + \varepsilon$$

In practice however we do not observe desired schooling S^*. Instead for those children that are currently not enrolled in school (the uncensored sample), we observe a discrete level of completed education S, where

$$S = \begin{cases} 0 \text{ if } S^* \leq \mu_0 \\ 1 \text{ if } \mu_0 < S^* \leq \mu_1 \\ 2 \text{ if } \mu_1 < S^* \leq \mu_2 \\ \vdots \\ J \text{ if } \mu_{J-1} < S^* \end{cases}$$

Here the μ's are threshold parameters that denote transition from one schooling category

to another. I define four such categories so that:

$$S = \begin{cases} 0 \text{ if no education attained} \\ 1 \text{ if highest grade completed is greater than 0 but less than (or equal to) 5.} \\ 2 \text{ if highest grade completed is greater than 5 but less than (or equal to) 10} \\ 3 \text{ if highest grade completed is greater than 10} \end{cases}$$

Under the assumption that ε is distributed normally:

$$\begin{aligned} \Pr(S=0) &= \Phi(\mu_0 - \beta X) \\ \Pr(S=1) &= \Phi(\mu_1 - \beta X) - \Phi(\mu_0 - \beta X) \\ \Pr(S=2) &= \Phi(\mu_2 - \beta X) - \Phi(\mu_1 - \beta X) \\ \Pr(S=3) &= 1 - \Phi(\mu_2 - \beta X) \end{aligned}$$

The likelihood function for the uncensored observations (L_U) can be written as:

$$\begin{aligned} L_U &= \Phi(\mu_0 - \beta X) \text{ for } S=0 \\ L_U &= \Phi(\mu_1 - \beta X) - \Phi(\mu_0 - \beta X) \text{ for } S=1 \\ L_U &= \Phi(\mu_2 - \beta X) - \Phi(\mu_1 - \beta X) \text{ for } S=2 \\ L_U &= 1 - \Phi(\mu_2 - \beta X) \text{ for } S=3 \end{aligned}$$

Individuals that are enrolled in school at the time of the survey are censored - for these children the desired number of years of schooling is not known. What we do know is that the desired level of schooling S^* exceeds the observed level of schooling S. Therefore

$S^* > \mu_{S-1}$ which in turn implies that

$$\varepsilon > \mu_{S-1} - \beta X \text{ for } S = 0, 1, 2, 3$$

So the likelihood of the censored observations (L_C) is therefore the probability that the error ε exceeds $\mu_{S-1} - \beta X$ and so

$$L_C = 1 - \Phi\left(\mu_{S-1} - \beta X\right); S = 0, 1, 2, 3$$

The likelihood function for the full problem can therefore be written as:

$$L = \prod L_U \prod L_C$$

Thus the censored ordered probit estimation methodology therefore accommodates both the non-negative restriction, the probability spikes and the discreteness of schooling and most importantly it also allows us to accommodate the right censoring issue by allowing currently enrolled individuals to enter the likelihood function separately from the individuals that have completed schooling.

The explanatory variables that I use in the regressions include individual and household level characteristics. Individual (child level) characteristics include the age and sex of the child. I include both the age of the child (AGE) and the square of the age of the child ($AGESQ$) to account for any non-linearity in the age effect. These two age terms also allow us to account for any birth cohort effects. To account for the sex of the child, we include a dummy variable ($GIRL$), which equals one if the child is a girl and zero otherwise. To examine whether there is a quantity-quality trade-off (Becker and Lewis [1973]) in educational attainment I include the number of co-resident siblings for each

child. However since the age of the sibling could be important I stratify the number of siblings by age: the number of siblings in the age group 0 - 5 ($SIB0-5$), the number of siblings in the age group 6 - 17 ($SIB6-17$) and the number of siblings in the age group 18 - 24 ($SIB18-24$). It has been argued that sibling composition may play an important role in a child's school participation, particularly if the child comes from a poor resource constrained household. This classification of siblings therefore takes account of whether there is competition for the limited household resources in schooling decisions. I include a series of dummies to indicate the highest education attained by the mother and the father[3] and a series of dummies to indicate the occupation of the father and mother. A number of previous studies have used years of schooling of the mother and father as the relevant measure of parental education. However there are two problems with that approach. First, there are many cases where data on parental education is missing. One could potentially lose a large part of the sample. The second and a more significant problem is that it fails to take into account the possible non-linearity in the effect of parental education on child schooling. There are a number of studies that show that parental education, particularly mother's education often have a non-linear effect on outcomes like fertility, child health and child education - mere attending school is not enough and for the mother's education effect to be significant in affecting child outcomes, the mother needs to have more than a

[3]The reference categories are that the father and the mother either have no schooling or their schooling levels are missing. It might be noted that few children have mothers with more than secondary education. The mother's education dummy corresponding to the mother having more than secondary education could not be included as an explanatory variable in the some of the regressions, particularly in the gender specific regressions.

certain threshold level of education. The use of the three education dummies for mother's education and father's education accounts for this possible non-linearity in the effect of parental education on child schooling. Household characteristics include household size ($HHSIZE$), log of household expenditure per adult ($LPCEXP$) and the religion of the household ($MUSLIM$). See Table 1 for a description of all the variables used in the analysis.

The log household expenditure per adult ($LPCEXP$) is used as a proxy for household permanent income. Total household expenditure is easier to measure compared to total household income and is typically measured with less error. Moreover total expenditure is typically a better proxy for permanent income because while income might be subject to transitory fluctuations, households typically use a variety of mechanisms to smooth consumption over time. Finally using per adult household expenditure allows us to avoid the contamination of the permanent income variable by the fertility schooling choices that households make jointly.

One problem is that there are no variables that adequately measure the cost of schooling. Distance to the nearest school is typically used as the cost of schooling as other measures of the cost of schooling, like fees paid, costs of books and cost of travelling, could be correlated with the unmeasured determinants of the demand for schooling and hence our empirical analysis could be subject to the standard endogeneity problems. Data on the distance to the nearest school is however not available. Data on the number of schools in the cluster and the type of schools in the cluster are available. However as Rosenzweig and Wolpin

[1986] argue, use of these variables could also lead to endogeneity problems.[4] All supply side variables are therefore ignored from the analysis.

One important methodological issue arises from the possible endogeneity of household expenditure in the demand for schooling equation - household expenditure is likely to be correlated with the unmeasured determinants of child schooling. One therefore needs to use instruments. The instruments used include the demographic and educational characteristics of the household head, set of occupational dummies for the household head, household composition and finally physical characteristics of the house where the child resides. There is however one other problem. Note that household expenditure is a continuous variable while demand for schooling is a discrete variable. Therefore we use the methodology developed by Rivers and Vuong [1988] to correct for the potential endogeneity problem. The procedure may be described as follows. First $LPCEXP$ is regressed on the set of household level variables that serve as instruments. This is the first stage regression. The error terms from the first stage regression ($LPCEXPE$) is included as an additional regressor in the second stage estimation (probit estimation of current enrolment and the censored ordered probit estimation of the highest grade attained). A significant coefficient on $LPCEXPE$ implies that the null hypothesis of exogeneity of permanent income is rejected. The estimation results show that the null hypothesis of exogeneity of the household expenditure variable is generally strongly rejected.

This completes our discussion of the estimation methodology. I now turn to the de-

[4]For example schools and community health services and facilities might often be a response to local health and educational characterisitcs and could be demand driven rather than supply driven.

scription of the data set used and a discussion of descriptive statistics.

3 Data and Descriptive Statistics:

The data set used in this paper is obtained from the Matlab Health and Socioeconomic Survey (MHSS), which was carried out in the MATLAB region of rural Bangladesh in 1996. MATLAB is notable for its ongoing prospective Demographic Surveillance System. The MATLAB research area is located around 50 kilometers south east of Dhaka, the capital of Bangladesh. The region is entirely rural and consists of 149 villages with an estimated population of 180,000 as per the 1982 census. The area is accessible only through river transport and is generally free from the effects of modernization. Traditional agriculture is the occupation of the majority of the population and fragmentation of land holding and increasing landless ness has contributed to the general impoverishment of the population. For a detailed description of the MATLAB Surveillance Population, see Menken and Phillips [1990]. Further information about Matlab can be obtained from the Web site of the International Centre for Diarrhoeal Research, Bangladesh (ICDDR,B). The ultimate objective of the MHSS survey was to enter into the public domain a new and unique micro-level data set for research on aging. The Main survey, consisting of household and individual-level information on 4,364 households clustered in 2,687 baris, or residential compounds, is a random sample of approximately one-third of the total number of baris in the Surveillance area. The Main sample data contain an additional 174 households clustered in 94 other baris. These households fell outside the prescribed sampling scheme and were dropped

from the sample. Thus, the total number of households in the Main sample data is 4,538. See Rahman et. al. [1999] for more details of the MHSS survey data set.

The primary aim of this paper is to examine the determinants of the demand for schooling for the a sample of children in rural Bangladesh. For the purposes of this paper, I restrict the sample to individuals aged 6 - 24. I have data on 10906 individuals in this age group belonging to 4000 households. 48.4% of the sample is girls and the majority of the households (89.6%) are Muslims. The school structure in Bangladesh is as follows: Grade 1 - 5 is primary school, Grade 6 - 10 is middle/secondary school, Grades 10+ is higher secondary/college. To proceed from Grade 10 to Grade 11 requires that the student pass an external exam (the School Final or Madhyamik) and to proceed from Grade 12 to college (proper) the individual needs to pass another external exam (the Higher Secondary or Uchhya Madhyamik). Table 1 presents descriptive statistics (mean and standard deviation) of all the variables used in the estimation.

When the left hand side (dependent) variable is current school enrolment, the observations are restricted to children in the age group $6 - 12$. On the other hand when the highest grade attained is the dependent variable the reference group consists of children in the age group $13 - 24$.[5]

Table 2 presents the current enrolment status of the children by age and sex. For both

[5]Traditionally the school going age group is 6 -18. However in many developing countries children delay their initial enrolment and also continue to remain in school. We partition the sample in the two cases because we are interested in examining different aspects of schooling and educational attainment for children belonging to different age groups.

boys and girls, the proportion enrolled in school at the time of the survey reaches a peak around the age of 11. There is some gender differential in current enrolment status, but the difference is never statistically significant.[6] Table 2 also presents the years of schooling for children aged $13-24$ separately for boys and girls. Generally the average years of schooling attained is higher for girls overall (in the age group $13-24$) $-$ the difference between the years of schooling of girls and boys is statistically different from zero. This is particularly true for children aged 20 and higher, which appears to be driving the result.

Table 3 presents selected descriptive statistics on the intergenerational transmission of education. Notice that irrespective of the level of education attained by the parents, the gender difference in current school enrolment (children aged $6-12$) is not statistically significant. There is also no gender differential in the intergenerational transmission of education for individuals aged $13-24$. What is interesting is that for the same level of education attained by the father and the mother, mother's education has a stronger effect on both the current enrolment status of children and on the years of schooling attained, relative to father's education.

4 Estimation Results:

I now turn to the estimation results. I start with the maximum likelihood probit estimates for current school enrolment (Table 5). I then present the censored ordered probit estimates for the highest grade attained (Table 6). In each case the sample includes all children in the

[6] I computed standard t-tests, which are available on request.

relevant age group and therefore in each regression, some households contribute multiple children to the sample and so the probability that the child has siblings in the sample is correlated with household size. Since the unmeasured determinants of schooling are correlated between households, this implies that the estimated standard errors could be biased downwards. We correct for this correlation by estimating robust standard errors - this allows us to use all of the observations in the sample, but adjusts for within household correlation across children (Deaton [1997]).

There exists a fair amount of evidence particularly from South Asian countries that argues that there are significant differences in the parental treatment of boys and girls. Generally it has been observed that parental inputs (health and educational) are biased in favor of boys. This differential could be in response to actual or perceived differences in the labor market returns to male and female education (Rosenzweig and Schultz [1982]). What this differential preferences implies is that the demand for schooling functions could be gender specific. I therefore compute separate estimates for boys and girls. To be more specific, each explanatory variable is first interacted with a girl child dummy in one regression and then with a boy child dummy in the second regression. In the first regression, the non-interacted coefficients give the effects for boys and the interacted coefficients give the $Girl - Boy$ difference. In the second regression, the non-interacted coefficients give the effects for girls and the interacted coefficients give the $Boy - Girl$ difference. The difference estimates are not presented due to space constraints but they are available on request. This method is used instead of the simple stratification because with it one can test the significance of the gender difference for each effect and the full sample can be used

for estimation in each case.

The first stage coefficient estimates (the OLS estimates foe $LPCEXP$ on the set of household characteristics) are presented in Table 4. The highest level of education attained by the household head has a significant effect on per adult household expenditure. Further the higher the education level of the household head, the greater the per adult household expenditure. Interestingly the age and the sex of the household head do not have a statistically significant effect on per adult household expenditure. Several of the household characteristics are also important. The log per adult household expenditure is higher if the household owns the house it resides in, the greater the number of rooms in the house, if the wall and the roof of the main bedroom is made of tin and if the household is connected to electricity. On the other hand the log per adult household expenditure is lower if the house is surrounded by piles of waste, if the floor of the main bedroom is made of dirt and if the main source of water for cleaning utensils is the local pond.

4.1 Current School Enrolment:

The maximum likelihood probit estimates for current enrolment ($SCHCURR$) status of children aged $5-12$ are presented in Table 5. I present estimates for all children and also separate estimates for boys and girls. I also present the marginal probit estimates, which are more easily interpreted. The Girl - Boy difference estimates are not presented, though they are available on request.

Notice that the sex of the child dummy ($GIRL$) though negative, is not statistically significant. This implies that relative to boys the probability of current school enrolment

is not significantly lower for girls. This is an interesting result, because most previous studies using data from South Asian countries conclude that there is a significant gender differential in the probability of current school enrolment, and the bias is generally in favor of boys. This result, combined with the ordered probit estimation results that we present later has important implications, which we will discuss later. Current school enrolment is significantly higher for a child belonging to a Muslim household. Being Muslim increases the probability of current school attendance for both boys and girls. An increase in household size increases current school attendance for all children and also for both boys and girls. Both the age of the child (AGE) and the square of the age ($AGESQ$) are statistically significant, indicating that there is a significant non-linearity in the effect of the age of the child on current school enrolment. Further the combination of signs indicates that an increase in the age of the child is associated with an increase in the probability that the child is enrolled in school, but beyond a certain age the effect becomes negative. One obtains similar age effects for the gender specific estimates.

There is a significant sibling rivalry effect (or a quantity quality trade off) in current school enrolment. All of the sibling variables ($SIB0-5$, $SIB6-17$ and $SIB18-24$) are negative and significant. The marginal estimates indicate the following: a unit increase in the number of siblings in the age group 0 - 5 reduces the probability of current school enrolment by 2.5 percentage points; a unit increase in the number of siblings in the age group 6 - 17 reduces the probability of current school enrolment by 5.2 percentage points; and a unit increase in the number of siblings in the age group $18-24$ reduces the probability of current school enrolment by 4.8 percentage. The gender specific estimates are similar.

The corresponding reduction in probabilities are 2.3, 4.6 and 4.4 percentage points for boys and 2.6, 5.8 and 5.3 percentage points for girls.

Parental education generally has a positive and statistically significant effect on the school enrolment of children in the age group 5 - 12.[7] The effects are quite strong. It might also be noted that the effect of mother's education on current enrolment is generally stronger compared to the effect of father's education. The marginal probit estimates show that relative to the reference case (of the father having no education or that father's education is missing), the probability of current enrolment is higher by 2.8 percentage points if the father has (some) primary schooling and the probability of current enrolment is higher by 4.1 percentage points if the father has more than primary but less than secondary schooling. The corresponding increase in probabilities are 4.7 percentage points and 5.6 percentage points for the mother having (some) primary schooling and the mother having more than primary but less than secondary schooling. The gender specific estimates show that father's education has either no effect or a weak effect on the probability of current enrolment of girls, though the effect of father's education is stronger on the current enrolment of boys. The mother's education dummies on the other hand always have a positive and statistically significant effect on the probability of current enrolment of both boys and girls.

Two other results are worth noting. First, while several of the father's occupation dummies have a statistically significant effect on the probability of current enrolment,

[7]Note that EDUCM3 is not included as one of the explanatory variables in our analysis in this case. This is because very few children have mothers with more than secondary schooling.

the signs of the coefficients are often the opposite of what one would expect. All of the mother's occupation dummies have a statistically significant effect on the probability of current enrolment. The gender specific estimates are similar. Second, an increase in the permanent income of the household increases the probability of current enrolment for all children and also separately for boys and girls. Further an increase in permanent income of the household increases the current enrolment of girls relative to boys - a 100 Taka increase in log per adult household expenditure increases the probability of current enrolment of boys by 6.6 percentage points and by more than 11 percentage points for girls. The difference ($Girl - Boy$) estimate is also positive and significant. The positive and statistically significant effect of an increase in permanent income on the probability of current enrolment coupled with the sibling rivalry effect indicate the presence of significant resource constraints within the household. Moreover the household resource constraint has a stronger adverse effect on the school enrolment probabilities of girls, relative to boys. Relaxation of the household resource constraint (an increase in a permanent income) therefore has a stronger effect on the probability of current schooling of girls. The null hypothesis of exogeneity of permanent income is however not always rejected. In particular, it is not rejected in the estimation of the current school enrolment for boys (though it is strongly rejected in the estimation of the current enrolment for girls). Also in the case of all children, the null hypothesis of exogeneity of permanent income is only weakly rejected.

4.2 Highest Grade Attained:

Let us now turn to the censored ordered probit estimates of the highest level of education attained. As with current enrolment, I present the estimates for all children and separately for boys and girls. The difference estimates are not presented, though they are available on request. A positive and significant coefficient indicates that a particular explanatory variable increases the probability of attaining post secondary schooling (Grade 10+), while a negative a significant effect implies that the relevant explanatory variable increases the probability of no schooling. To understand what is happening to the intermediate categories, we need to examine the marginal effects. Notice further that in this case the sample is restricted to individuals in the age group $13-24$, to allow for the differentiation between non-enrolment and non-attainment. This is a subtle but an important difference. Consider for example a child who has zero years of schooling. This could either be because he/she is not yet enrolled in school (late enrolment, which can be quite important in the context of South Asia) or because he/she chooses not to attain any schooling.[8] By restricting the sample to children aged $13-24$, we are able to (at least to some extent) separate out non-enrolment from non-attainment. In doing so it is implicitly assumed that a child that has not enrolled in school by the age of 13 will never enrol in school. I considered estimating a censored ordered probit model with selection, but rejected this approach in the absence of credible exclusion restrictions (identifying variables that affect the probability of enrolment but not grade attainment).

Let begin with a discussion of the censored ordered probit estimation results. The es-

[8] I would like to thank Sarmistha Pal for pointing this out to me.

timated coefficients are presented in Table 6 and the corresponding marginal probabilities are presented in Table 7. The coefficient estimate for $GIRL$ is positive and significant. This implies that relative to boys, the probability of attaining post secondary schooling is significantly higher for girls. The fact that educational attainment of girls is significantly higher that the educational attainment of boys is quite interesting, particularly most previous studies using data from South Asia has found that the educational attainment of boys is higher compared to that of girls. In Bangladesh, girls have been specifically targeted by several government programs like the food for education program (FFE) and schools run by non-governmental organizations. The FFE program aims to keep children of poor rural families in school. In 1995 - 96, 2.2 children (13% of total enrolment) participated in the program. Under this program, the participating households receive monthly food rations as long as they send their children to school. Ravallion and Wodon [2000] argue that the value of the FFE stipend is about 13% of the average monthly earnings of boys and 20% of that for girls. Even though the FFE stipend is significantly lower compared to the market wage rate for both boys and girls, they are actually lower for boys relative to girls implying that the opportunity cost of not attending school is higher for girls relative to boys. There are other government and non governmental programs that also encourage school attendance and also school continuation by girls - in the form of free schooling, free lunch and so on.[9] The age effect is not significant - the age of the child (AGE) is not statistically

[9] In other South Asian countries as well it has been observed that the provision of mid day meals have a significant effect on both the probability of current enrolment and the highest grade attained. See Dreze and Kingdon [2001].

significant, and the square of the age of the child ($AGESQ$) is only weakly significant. Further the gender specific estimates show that while the age effect is weakly significant for boys, it is non-existent for girls. As in the case of current enrolment, household size is positively related to the educational attainment of children Being Muslim increases the probability of attaining post secondary education for girls, but the $MUSLIM$ dummy does not have a statistically significant effect on the educational attainment of boys. The sibling rivalry effect is significant and negative. Unlike in the case of current enrollment status, the null hypothesis of exogeneity of household permanent income is always rejected (for all children and separately for boys and girls). Further the coefficient estimate for $LPCEXP$ is positive and significant, implying that household resource constraints have a significant effect on educational attainment of the children. The results are similar when we examine the gender specific estimates.

Parental education has a positive and significant effect on the educational attainment of the children.[10] Generally however, mother's education has a stronger effect on the educational attainment of the children, relative to father's education. For example note that father's education beyond secondary school does not have a significant effect on the educational attainment of girls. The marginal probabilities confirm this result. For example $EDUCM2$ (highest education attained by the mother is more than primary but less than secondary school) increases the probability of attainment of post secondary schooling

[10] In the case of all children I was able to include EDUCM3 (the highest education of the mother is more than secondary schooling) as an explanatory variable. This variable cannot be included in the gender specific regressions because of the lack of adequate observations.

for the child by 21 percentage points. On the other hand $EDUCF2$ (highest education attained by the father is more than primary but less than secondary school) increases the probability of attainment of post secondary schooling by 6.8 percentage points. The marginal probabilities associated with the gender specific estimation show that $EDUCM2$ increases the probability of post secondary schooling by 16 percentage points for boys and by 27 percentage points for girls. The corresponding figures for $EDUCF2$ are 6 and 7 percentage points. Finally note that none of the mother's occupation dummies have a statistically significant effect on the educational attainment of boys though they generally have a positive and statistically significant effect on the educational attainment of girls.

5 Concluding Comments:

This paper examines determinants of educational attainment of a set of Bangladeshi children. I use two alternative measures of educational attainment: current school enrolment and the highest level of schooling attained. The analysis of current school enrolment is fairly straight forward, but there are several important methodological issues associated with the estimation of the highest level of schooling attained. Surveys typically measure schooling by the years of education attained (or the highest class completed). This leads to several problems. First, even though desired schooling might be a continuous variable, the researcher only observes only discrete years of schooling. Second, data on education attainment from developing countries is often characterized by a large mass point at zero years of education and similar probability spikes at primary and secondary school comple-

tion levels, where progress to the next level is often impeded by school fees and entrance requirements. OLS estimation is therefore inappropriate under this set up. Third, there is a censoring problem here in that while for individuals that are enrolled in school at the time of the survey. One can argue that the desired level of schooling equals the completed years of education for the children that are not currently enrolled in school. However for children that are currently enrolled in school, the desired years of schooling clearly exceeds the years of completed schooling. These observations are therefore right censored. In this paper I use a censored ordered probit model to estimate the highest grade attained. I also conduct separate estimates by the gender of the child, since it has been argued that in many developing countries parents have different preferences for boys' and girls' education and this could imply that the determinants of the demand for schooling could be quite different for boys and girls.

It is worth summarizing some of the important results of the paper. We find that there is very no gender differential in the probability of current school enrolment of children aged $6-12$, girls have a significantly higher probability of continuing in school relative to boys. This surprising result, at least in the context of South Asia could be due to specific governmental and non-governmental programs that have been designed to encourage parents to continue to send their girls to school. Increases in the permanent income of the household is always associated with an increase in educational attainment. This essentially implies that child schooling is a normal good. It also implies the existence of resource constraints within the household. This notion of resource constraints within the household is further supported by the result that sibling rivalry effects are significant and negative. The results also show

that increases in permanent income of the household contributes more to the educational attainment of boys relative to girls. Finally the null hypothesis of exogeneity of permanent income is generally rejected.

While generally parental education has a positive and statistically significant effect on the educational attainment of children. Moreover the coefficient estimates show that mother's education has a stronger effect on current school enrolment of children and on the highest schooling attained. One particular aspect of the relationship between parental education and child schooling is worth re-emphasizing. The existing literature argues that mother's education generally has a stronger influence on the education of daughters relative to sons (see for example Behrman and Wolfe [1987] and King and Lillard [1987]). The coefficient estimates from the Bangladesh MHSS data set confirms the existing results. In almost all cases father's education has a weak or even no effect on the probability of school enrolment and on the highest education attained by girls. While mother's education significantly and positively affects educational attainment of both boys and girls, the effect is stronger on the educational attainment of girls.

Education and human capital accumulation are essential components of economic development. This paper attempts to identify some of the individual and household level characteristics that affect the demand for schooling in Bangladesh. Given the extreme poverty, high fertility rate and low literacy rates among the population of Bangladesh, increasing education attainment levels of the current school age population is a particularly important issue in the context of Bangladesh. By focussing on the factors that affect the demand for schooling (rather than supply side factors), the paper identifies several key

areas for policy makers to target in their attempt to increase educational attainment and human capital accumulation in Bangladesh.

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Table 1: Variable Description and Descriptive Statistics

Variable		N	Mean	Standard Deviation
Household Level Variables				
HHSIZE	Household Size	4000	5.93	2.15
MUSLIM	= 1, if the household is Muslim	4000	0.90	0.31
LPCEXP	Log of per adult household expenditure	4000	7.44	0.87
AGEHD	Age of Household Head	4000	48.04	13.06
FHH	= 1, household head is female	4000	0.14	0.34
EDUCHD1	= 1, if highest education of the household head is primary school	4000	0.29	0.46
EDUCHD2	= 1, if highest education of the household head is more than primary but less than secondary school	4000	0.17	0.38
EDUCHD3	= 1, if highest education of the household head is more than secondary school	4000	0.06	0.24
TOTCHILD	Total number of children in the household	4000	2.69	1.55
ADULTM	Total number of adults in the household	4000	1.59	1.01
ADULTF	Total number of elderly in the household	4000	1.64	0.83
WASTE	= 1 if house is surrounded by human/animal waste	4000	0.24	0.43
PILES	= 1 if house is surrounded by piles of trash	4000	0.41	0.49
OWNHOUSE	= 1 if own house	4000	0.94	0.24
NUMROOMS	Number of rooms in house	4000	3.42	5.81
FLOOR	= 1 if flooring in main bedroom is dirt	4000	0.97	0.18
WALL	= 1 if wall in main bedroom is tin	4000	0.46	0.5
ROOF	= 1 if roof in main bedroom is tin	4000	0.95	0.21
ELECTRIC	= 1 if the household uses electricity	4000	0.11	0.32
DWATER	= 1 if main source of drinking water is tube-well	4000	0.94	0.24
LWATER	= 1 if main source of water for cleaning utensils is the pond	4000	0.62	0.49
TOILM	= 1 if toilet for men is open latrine	4000	0.46	0.5
TOILF	= 1 if toilet for women is open latrine	4000	0.46	0.5

TOILC	= 1 if toilet for children is open latrine	4000	0.25	0.43
OCCPHD1	= 1 if occupation of household head is agriculture (own land)	4000	0.25	0.43
OCCPHD2	= 1 if occupation of household head is agriculture (leased in land)	4000	0.04	0.2
OCCPHD3	= 1 if household head is agricultural laborer	4000	0.08	0.27
OCCPHD4	= 1 if household head is daily laborer	4000	0.04	0.2
OCCPHD5	= 1 if household head owns a grocery shop	4000	0.02	0.15
OCCPHD6	= 1 if household head owns a fish business	4000	0.02	0.13
OCCPHD7	= 1 if household head owns any other business	4000	0.05	0.22
OCCPHD8	= 1 if household head is a rickshaw/van driver	4000	0.02	0.15
OCCPHD9	= 1 if household head is a fisherman	4000	0.02	0.15
OCCPHD10	= 1 if household head is a boatman	4000	0.02	0.14
OCCPHD11	= 1 if household head is retired	4000	0.03	0.16
OCCPHD12	= 1 if household head is unable to do work	4000	0.03	0.18
OCCPHD13	= 1 if household head is employed in “any other service”	4000	0.03	0.18
OCCPHD14	= 1 if household head is a housewife	4000	0.04	0.19
OCCPHD15	= 1 if household head is employed in jusk paddy/boil/dry	4000	0.03	0.16
OCCPHD16	= 1 if household head is is employed in duck-hen rearing	4000	0.04	0.21
Individual Level Variables				
EDUCM1	= 1, if highest education of the mother is primary school	10906	0.26	0.44
EDUCM2	= 1, if highest education of the mother is more than primary but less than secondary school	10906	0.09	0.28
EDUCM3	= 1, if highest education of the mother is more than secondary school	10906	0.00	0.06
EDUCF1	= 1, if highest education of the father is primary school	10906	0.23	0.42
EDUCF2	= 1, if highest education of the father is more than primary but less than secondary school	10906	0.15	0.36
EDUCF3	= 1, if highest education of the father is more than secondary school	10906	0.05	0.21

OCCPF1	= 1 if occupation father is agriculture (own land)	10906	0.22	0.41
OCCPF2	= 1 if occupation father is agriculture (leased in land)	10906	0.04	0.19
OCCPF3	= 1 if father is agricultural laborer	10906	0.07	0.25
OCCPF4	= 1 if father is daily laborer	10906	0.03	0.17
OCCPF5	= 1 if father owns a grocery shop	10906	0.02	0.14
OCCPF6	= 1 if father owns a fish business	10906	0.02	0.13
OCCPF7	= 1 if father owns any other business	10906	0.05	0.21
OCCPF8	= 1 if father is a rickshaw/van driver	10906	0.02	0.13
OCCPF9	= 1 if father is a fisherman	10906	0.03	0.16
OCCPF10	= 1 if father is a boatman	10906	0.02	0.14
OCCPF11	= 1 if father is retired	10906	0.02	0.12
OCCPF12	= 1 if father is unable to do work	10906	0.02	0.12
OCCPM1	= 1 if father is a housewife	10906	0.23	0.42
OCCPM2	= 1 if father is employed in jusk paddy/boil/dry	10906	0.23	0.42
OCCPM3	= 1 if mother is employed in goat rearing	10906	0.03	0.16
OCCPM4	= 1 if mother is employed in duck-hen rearing	10906	0.31	0.46
AGE	Age of the Child	10906	14.07	5.26
GIRL	1, if the child is a girl	10906	0.48	0.50
SIB_0-5	Number of Siblings aged 0 - 5	10906	0.73	0.85
SIB_6-17	Number of Siblings aged 6 - 17	10906	1.78	1.30
SIB_18-24	Number of Siblings aged 18 - 24	10906	0.97	1.02

Table 2:
Selected Descriptive Statistics on Current Enrolment and Years of Schooling, by Age

Age	Boy	Girl	All Children
Current Enrolment			
6	0.627	0.641	0.634
7	0.823	0.796	0.809
8	0.882	0.846	0.863
9	0.916	0.896	0.905
10	0.928	0.915	0.922
11	0.935	0.939	0.937
12	0.896	0.923	0.909
6 - 12	0.861	0.853	0.857
Years of Schooling			
13	3.718	3.595	3.659
14	4.040	4.268	4.140
15	4.802	4.756	4.782
16	4.565	5.216	4.850
17	5.342	5.626	5.480
18	5.312	5.357	5.333
19	5.687	5.608	5.648
20	6.229	5.646	5.953
21	6.271	4.835	5.576
22	6.061	5.234	5.661
23	5.846	4.811	5.367
24	5.612	4.212	4.910
13 - 24	5.144	4.918	5.039

Table 3:

Parental Education and Child Education

Parental Education	Boys	Girls	Overall
Current Enrolment (Aged 5 - 12)			
EDUCF0	0.802	0.792	0.797
EDUCF1	0.886	0.880	0.883
EDUCF2	0.935	0.923	0.929
EDUCF3	0.957	0.943	0.949
EDUCM0	0.808	0.802	0.805
EDUCM1	0.923	0.905	0.914
EDUCM2	0.955	0.950	0.953
Years of Schooling (Aged 13 - 24)			
EDUCF0	3.735	3.682	3.716
EDUCF1	5.549	5.498	5.529
EDUCF2	6.851	7.042	6.928
EDUCF3	8.507	8.427	8.471
EDUCM0	4.103	4.148	4.119
EDUCM1	6.505	6.592	6.540
EDUCM2	8.033	8.113	8.070
EDUCM3	9.583	10.333	9.733

Table 4:
First Stage OLS Estimates for Log Per Adult Household Expenditure

	Coefficient	t-value
CONSTANT	7.582	93.346
AGEHD	0.000	0.578
FHH	0.008	0.160
MUSLIM	0.037	1.522
EDUCHD1	0.168	9.477
EDUCHD2	0.314	15.295
EDUCHD3	0.515	16.388
OCCPHD1	0.094	4.455
OCCPHD2	-0.115	-3.474
OCCPHD3	-0.090	-2.813
OCCPHD4	-0.211	-6.900
OCCPHD5	-0.001	-0.017
OCCPHD6	0.093	1.774
OCCPHD7	0.082	2.770
OCCPHD8	-0.090	-1.807
OCCPHD9	-0.225	-5.929
OCCPHD10	-0.100	-1.954
OCCPHD11	0.115	1.938
OCCPHD12	-0.182	-4.141
OCCPHD13	0.063	1.352
OCCPHD14	0.183	2.975
OCCPHD15	0.218	3.576
OCCPHD16	0.173	2.964
TOT_0-5	-0.011	-1.264
TOT_6-17	0.123	22.575
TOT_18-24	0.173	22.228
ADULTM	-0.197	-15.920
ADULTF	-0.210	-17.647
WASTE	0.010	0.516
PILES	-0.093	-5.706
OWNHOUSE	0.090	3.108
NUMROOMS	0.007	2.559
FLOOR	-0.483	-9.782
WALL	0.272	17.688
ROOF	0.142	4.631
ELECTRIC	0.124	5.817
DWATER	0.008	0.230
LWATER	-0.094	-6.344
TOILM	0.054	0.737
TOILF	-0.111	-1.529
TOILC	-0.021	-1.093
N	10906	
R^2	0.274	

Notes:
Robust Standard Errors

Table 5: Binary Probit Estimates of Current Enrolment (6 - 12 years)

	All			Boys			Girls		
	Coefficient	t-value	Marginal Effect	Coefficient	t-value	Marginal Effect	Coefficient	t-value	Marginal Effect
CONSTANT	-9.832	-9.204		-9.918	-9.185	-0.050	-9.918	-9.185	
GIRL	-0.052	-1.039	-0.009						
AGE	1.246	9.554	0.221	1.551	8.906	0.271	0.962	5.443	0.168
AGESQ	-0.059	-8.062	-0.010	-0.077	-7.878	-0.013	-0.042	-4.182	-0.007
SIB0_5	-0.142	-2.637	-0.025	-0.132	-1.698	-0.023	-0.146	-2.099	-0.026
SIB6_17	-0.295	-5.253	-0.052	-0.263	-3.558	-0.046	-0.329	-4.801	-0.058
SIB18_24	-0.269	-4.160	-0.048	-0.251	-3.001	-0.044	-0.302	-3.780	-0.053
HHSIZE	0.159	4.501	0.028	0.159	3.223	0.028	0.167	4.023	0.029
MUSLIM	0.461	5.577	0.102	0.255	2.074	0.051	0.607	5.443	0.141
EDUCF1	0.166	2.530	0.028	0.160	1.748	0.027	0.177	1.893	0.029
EDUCF2	0.259	2.786	0.041	0.313	2.349	0.048	0.215	1.695	0.034
EDUCF3	0.327	1.883	0.048	0.423	1.705	0.057	0.211	0.905	0.033
EDUCM1	0.283	4.302	0.047	0.341	3.591	0.055	0.249	2.732	0.041
EDUCM2	0.388	3.136	0.056	0.385	2.289	0.055	0.407	2.289	0.057
OCCPF1	-0.145	-1.988	-0.027	-0.166	-1.630	-0.031	-0.146	-1.404	-0.027
OCCPF2	-0.080	-0.623	-0.015	-0.091	-0.473	-0.017	-0.066	-0.387	-0.012
OCCPF3	-0.224	-2.412	-0.045	-0.206	-1.603	-0.040	-0.262	-2.008	-0.053
OCCPF4	0.209	1.574	0.033	0.148	0.817	0.024	0.308	1.645	0.045
OCCPF5	-0.019	-0.106	-0.003	-0.023	-0.100	-0.004	0.012	0.045	0.002
OCCPF6	-0.029	-0.184	-0.005	0.018	0.079	0.003	-0.127	-0.569	-0.024
OCCPF6	0.084	0.691	0.014	0.165	0.901	0.026	0.024	0.145	0.004
OCCPF7	-0.138	-0.998	-0.026	-0.208	-1.006	-0.041	-0.076	-0.416	-0.014
OCCPF9	-0.153	-1.180	-0.030	-0.367	-2.027	-0.079	0.008	0.047	0.001
OCCPF10	0.019	0.125	0.003	0.102	0.466	0.017	-0.046	-0.217	-0.008
OCCPF11	-0.985	-2.933	-0.284	-1.154	-2.891	-0.348	-0.928	-1.886	-0.260

OCCPF12	-0.457	-1.732	-0.106	-1.158	-3.269	-0.349	0.136	0.319	0.022
OCCPM1	0.159	1.854	0.027	0.181	1.484	0.030	0.142	1.185	0.024
OCCPM2	0.454	5.029	0.070	0.448	3.423	0.068	0.474	3.757	0.071
OCCPM3	0.295	1.944	0.044	0.283	1.278	0.041	0.324	1.530	0.046
OCCPM4	0.326	3.948	0.055	0.249	2.090	0.042	0.412	3.579	0.067
LPCEXP	0.510	4.273	0.091	0.376	2.785	0.066	0.648	4.617	0.113
LPCEXPE	-0.204	-1.641	-0.036	-0.065	-0.435	-0.011	-0.352	-2.300	-0.062
N		4704			4704			4704	
Wald χ^2		502.30			538.44			538.44	
Prob > χ^2		0.000			0.000			0.000	
Pseudo R^2		0.173			0.180			0.180	
Log likelihood		-1582.656			-1582.656			-1582.656	

Notes:

Sample Not stratified by Gender. Hence the same number of observations in each estimation

Robust Standard Errors

Table 6: Censored Ordered Probit Estimates of Highest Grade Attained (13 - 24 years)

	All		Boys		Girls	
	Coefficient	**t-value**	**Coefficient**	**t-value**	**Coefficient**	**t-value**
ONE	-10.716	-11.816	-10.608	-11.680	-10.608	-11.680
GIRL	0.136	3.625				
AGE	0.109	1.542	0.140	1.800	0.061	0.731
AGESQ	-0.004	-1.896	-0.004	-1.797	-0.003	-1.293
SIB0_5	-0.413	-12.858	-0.420	-9.655	-0.397	-8.513
SIB6_17	-0.467	-16.956	-0.499	-14.742	-0.452	-11.665
SIB18_24	-0.493	-15.686	-0.511	-13.356	-0.489	-11.851
HHSIZE	0.321	17.326	0.337	14.194	0.315	12.525
MUSLIM	0.129	2.303	0.046	0.592	0.264	3.182
EDUCF1	0.216	4.373	0.208	3.471	0.243	2.698
EDUCF2	0.306	4.740	0.280	3.555	0.341	2.884
EDUCF3	0.536	3.780	0.606	3.596	0.429	1.614
EDUCM1	0.490	9.720	0.455	7.558	0.543	5.815
EDUCM2	0.951	9.682	0.755	6.311	1.225	5.555
EDUCM3	0.849	1.842				
OCCPF1	0.003	0.061	-0.063	-1.047	-0.002	-0.028
OCCPF2	0.021	0.217	-0.024	-0.199	0.003	0.018
OCCPF3	-0.186	-2.353	-0.268	-2.712	-0.174	-1.328
OCCPF4	0.054	0.472	0.121	0.820	-0.167	-0.921
OCCPF5	0.127	0.958	0.101	0.628	0.168	0.692
OCCPF6	-0.556	-4.072	-0.495	-2.863	-0.749	-3.199
OCCPF7	0.052	0.518	-0.058	-0.485	0.214	1.111
OCCPF8	-0.272	-1.270	-0.166	-0.639	-0.641	-1.602
OCCPF9	-0.510	-4.324	-0.550	-3.833	-0.628	-2.862
OCCPF10	-0.016	-0.124	-0.061	-0.396	0.035	0.139
OCCPF11	-0.073	-0.685	-0.444	-3.210	0.568	2.586

OCCPF12	0.145	1.307	-0.021	-0.161	0.378	1.738
OCCPM1	0.280	5.250	-0.044	-0.628	0.460	5.013
OCCPM2	0.233	4.240	0.016	0.222	0.263	2.688
OCCPM3	0.239	1.957	0.070	0.495	0.077	0.285
OCCPM4	0.233	4.503	-0.002	-0.024	0.266	3.072
LPCEXP	1.323	20.582	1.286	16.567	1.392	17.198
LPCEXPE	-1.011	-15.250	-0.872	-10.726	-1.181	-13.912
$\mu(1)$	0.915	46.661	0.927	46.384	0.927	46.384
$\mu(2)$	2.316	53.326	2.351	52.546	2.351	52.546
N	6202		6202		6202	
Wald χ^2	5478.445		5593.451		5593.451	
Prob > χ^2	0.000		0.000		0.000	
Number Censored	3309		3309		3309	
Log likelihood	-4592.044		-4534.541		-4534.541	

Notes:

Sample Not stratified by Gender. Hence the same number of observations in each estimation

Robust Standard Errors

Table 7: Marginal Effects from Censored Ordered Probit Estimation of Highest Grade Attained (13 - 24 years)

	All				Boys				Girls			
	S=0	**S=1**	**S=2**	**S=3**	**S=0**	**S=1**	**S=2**	**S=3**	**S=0**	**S=1**	**S=2**	**S=3**
GIRL	-0.0252	-0.0262	0.0212	0.0303								
AGE	-0.0202	-0.021	0.0169	0.0242	-0.0252	-0.0276	0.022	0.0309	-0.011	-0.012	0.0095	0.0134
AGESQ	0.0007	0.0007	-0.0005	-0.0008	0.0007	0.0007	-0.0006	-0.0008	0.0005	0.0006	-0.0004	-0.0006
SIB0_5	0.0766	0.0797	-0.0643	-0.092	0.0756	0.0829	-0.0659	-0.0926	0.0714	0.0782	-0.0622	-0.0874
SIB6_17	0.0867	0.0902	-0.0728	-0.1042	0.0898	0.0984	-0.0782	-0.1099	0.0813	0.0891	-0.0709	-0.0996
SIB18_24	0.0916	0.0952	-0.0768	-0.11	0.092	0.1008	-0.0802	-0.1127	0.0879	0.0964	-0.0766	-0.1077
HHSIZE	-0.0595	-0.0619	0.0499	0.0715	-0.0606	-0.0664	0.0528	0.0742	-0.0567	-0.0621	0.0494	0.0694
MUSLIM	-0.0239	-0.0249	0.0201	0.0287	-0.0083	-0.0091	0.0072	0.0101	-0.0475	-0.0521	0.0414	0.0582
EDUCF1	-0.04	-0.0416	0.0336	0.0481	-0.0374	-0.041	0.0326	0.0458	-0.0437	-0.0479	0.0381	0.0535
EDUCF2	-0.0569	-0.0592	0.0477	0.0683	-0.0503	-0.0551	0.0438	0.0616	-0.0615	-0.0674	0.0536	0.0753
EDUCF3	-0.0995	-0.1035	0.0835	0.1195	-0.109	-0.1195	0.095	0.1335	-0.0772	-0.0846	0.0673	0.0946
EDUCM1	-0.091	-0.0946	0.0763	0.1093	-0.0819	-0.0897	0.0714	0.1003	-0.0977	-0.107	0.0851	0.1196
EDUCM2	-0.1765	-0.1836	0.1481	0.212	-0.1359	-0.1489	0.1184	0.1664	-0.2206	-0.2417	0.1922	0.2701
EDUCM3	-0.1577	-0.164	0.1323	0.1894								
OCCPF1	-0.0006	-0.0006	0.0005	0.0007	0.0114	0.0125	-0.0099	-0.0139	0.0004	0.0005	-0.0004	-0.0005
OCCPF2	-0.0039	-0.004	0.0032	0.0046	0.0043	0.0047	-0.0037	-0.0052	-0.0006	-0.0006	0.0005	0.0007
OCCPF3	0.0345	0.0358	-0.0289	-0.0414	0.0483	0.053	-0.0421	-0.0592	0.0314	0.0344	-0.0274	-0.0385
OCCPF4	-0.01	-0.0104	0.0084	0.012	-0.0219	-0.024	0.019	0.0268	0.03	0.0329	-0.0262	-0.0368
OCCPF5	-0.0235	-0.0245	0.0197	0.0283	-0.0181	-0.0199	0.0158	0.0222	-0.0302	-0.0331	0.0263	0.037
OCCPF6	0.1033	0.1074	-0.0866	-0.124	0.0891	0.0977	-0.0777	-0.1091	0.1348	0.1477	-0.1174	-0.165
OCCPF7	-0.0097	-0.0101	0.0082	0.0117	0.0105	0.0115	-0.0091	-0.0128	-0.0386	-0.0422	0.0336	0.0472
OCCPF8	0.0506	0.0526	-0.0424	-0.0608	0.0299	0.0327	-0.026	-0.0366	0.1154	0.1264	-0.1005	-0.1413
OCCPF9	0.0947	0.0985	-0.0794	-0.1137	0.0989	0.1084	-0.0862	-0.1211	0.1131	0.1239	-0.0986	-0.1385
OCCPF10	0.003	0.0031	-0.0025	-0.0036	0.011	0.0121	-0.0096	-0.0135	-0.0063	-0.0069	0.0055	0.0077
OCCPF11	0.0135	0.0141	-0.0114	-0.0163	0.08	0.0876	-0.0697	-0.0979	-0.1023	-0.1121	0.0891	0.1252
OCCPF12	-0.027	-0.0281	0.0226	0.0324	0.0038	0.0042	-0.0033	-0.0047	-0.0681	-0.0746	0.0593	0.0834
OCCPM1	-0.052	-0.0541	0.0436	0.0625	0.008	0.0088	-0.007	-0.0098	-0.0827	-0.0907	0.0721	0.1013
OCCPM2	-0.0432	-0.0449	0.0363	0.0519	-0.0028	-0.0031	0.0025	0.0035	-0.0474	-0.0519	0.0413	0.058
OCCPM3	-0.0444	-0.0462	0.0372	0.0533	-0.0127	-0.0139	0.011	0.0155	-0.0138	-0.0152	0.0121	0.0169
OCCPM4	-0.0432	-0.045	0.0363	0.0519	0.0003	0.0003	-0.0003	-0.0004	-0.048	-0.0525	0.0418	0.0587
LPCEXP	-0.2457	-0.2555	0.2061	0.2951	-0.2316	-0.2538	0.2018	0.2835	-0.2506	-0.2747	0.2184	0.3069
LPCEXPE	0.1877	0.1952	-0.1575	-0.2254	0.157	0.172	-0.1368	-0.1922	0.2125	0.2329	-0.1852	-0.2603