Eurasian
Research
Journal
January 2019
Vol. 1, No. 1.

THE EFFECT OF GENDER DIFFERENCES ON EDUCATION DEMAND IN TURKEY: ORDERED PROBIT MODEL

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ABSTRACT

The aim of the paper is to analyze the factors that affect education demand with regard to gender differences and determine main determinants of education demand. In this study, beyond the relation between education and welfare, by showing the effect of demographic and socio-psychological characteristics of the households on education demand, it is expected to contribute to the development of education policy. The data is taken from Turkish Statistical Institute's Household Budget Survey for 2014 and policy recommendations are developed by comparing the results of ordered probit model with marginal effects with the findings in literature.

Key Words: Education demand, gender, ordered probit model, education demand, welfare.

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INTRODUCTION

Education plays an important role in the development of society besides economic development. Education is closely related to the development of countries; the productivity of the workforce, the likelihood of education for future generations, and income distribution. Policies aimed increasing the level of education of a society aim primarily raising the level of education and at the same time eliminating gender-related differences in educational attainment. In countries like Turkey, the gender of the child is important in education. Girls are known to have a lower literacy rate than boys.

Knowing the factors that the households consider when deciding on the education of the child in terms of the efficiency of the educated investments will enable the education investments to be done in an accurate and impartial manner. For this reason, the aim of this study is to open up the factors determining the primary and secondary education demands of girls and boys in Turkey to discuss and to reveal the similarities and differences between previous studies. The first part deals with the studies on the determinants of education demand in Turkey. Data set and method are explained in the second part, descriptive statistics in the third part, and application results in the last part.

LITERATURE REVIEW

Tansel (2002) investigated the main determinants of gender differences in educational demand using the Household Income and Consumption Expenditure Survey published by the Turkish Statistical Institute (TURKSTAT) in 1994. In the study in which the individual probit model for boys and girls was estimated, it was observed that the low educational level was positively related to distance to a metropolitan city. The distance to Istanbul leads to lower education levels for girls and boys at primary education level. This study deals with spatial effects.

Smits and Hosgor (2006) investigated the family characteristics determining the status of primary and secondary education enrollment by using the 1998 Turkey Demographic and Health Survey Questionnaire. In the study conducted by multiple logistic regression analysis; household income, father's employment status, number of siblings and mother's ability to speak Turkish were expressed as the main determinants of registration to the school.

Rankin and Aytac (2006) determined the causes of gender differences in education by using the data obtained from the 1988 Turkish Family Survey. According to the results of the study with multiple logistic regression analysis, cultural characteristics and gender differences in post-primary education were identified as the most important factors affecting the schooling rate.

Using the 1998 Turkey Demographic and Health Survey Questionnaire, as Smits and Hosgor (2006) did, Dayioglu et al. (2009) investigated the effect of the number of siblings, the order of birth and the gender of siblings on the schooling rate in Turkey's cities. The analysis was carried out using the instrument variable estimator method. According to the results, the number of siblings has no effect on the schooling rate. According to the results, obtained from the order of birth, it is determined that the median siblings have the worst schooling rate.

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Kilic (2012) investigated the determinants of education demand according to gender difference in Turkey by using data of 2003 TURKSTAT Household Budget Survey. Four separate samples were drawn up to determine the characteristics of parents and households determining primary and secondary education requirements for girls and boys. The independent variables that determine educational demand are; the education level of the family, the employment status, whether or not they have agricultural activities, monthly household expenditures, housing as wealth indicator, living in large family, number of people in the household, having small brother between 0-5 years and whether or not being the biggest child in the household. In addition, since the 2003 Household Budget Survey includes regional data, the distance to a metropolitan city of the living area of the household is included as an independent variable giving regional characteristics. Dependent variable for primary education request is divided into three categories: 1 if the child is illiterate, 1 if literate but no graduation, and 2 if he/she has completed primary education. Secondary dependent variables consist of four categories: 1 if the child is not literate, 0 if literate but no graduation, 1 if he has completed five years of compulsory education, 2 if he has completed eight years of compulsory education, and 4 if he has completed secondary education. Ordered probit model was used as the method. According to the results of the study, the most important determinant of the education demand for boys and girls is the education level of the parents. When the marginal effects are examined, the level of education of the father on the educational request has a greater influence than that of the mother.

DATA AND METHODOLOGY

The data used in this study were obtained from the 2014 Household Budget Survey prepared by the Turkish Statistical Institute. The survey covers 10,123 households and 36,845 individuals in Turkey. In accordance with this analysis, the survey includes information on the employment status, income, education status, occupation of parents. There are also data that reflect the characteristics of households such as homeownership, number of rooms in the house, sibling presence, household type that can affect the education demand. In this study, in which the child's primary and secondary demands were examined according to gender, a new data set was created in which the children and their parents were matched. In this data set, children are defined as children of the household head, regardless of whether they are female or male.

Primary education refers to compulsory education for eight years and secondary education refers to high school education. A child graduated from primary or secondary education in 2014 is subject to eight years of compulsory education and there is no primary school graduation option in the datasets but there is an option of primary school student because the questionnaire includes open education information as well as considering that reading out is common in Turkey. Since a student who graduated from primary school in 2014 will be 14 years old, the data set is limited to 14-17 age range. Due to the prevalence of late start-ups and retention in Turkey, the data set has been expanded to cover the age of 17 years. A child graduated from secondary school in 2014 will be 18 years old and this data set has been extended to 20 years due to the reasons described above.

Primary dependent variable is 0 if the child is not graduated from any school,

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1 if primary school student, 2 if he has completed primary education. Secondary dependent variable is 0 if the child is not graduated from any school, 1 if he has completed primary school, or 2 if he has completed secondary school.

Independent variables were collected in two groups as parental and household characteristics. Parental characteristics include the education status of the mother and father, the status of employment, whether they work for their own accounts in agriculture, whether they are paid or employers. Household characteristics include household expenditure, the number of people living in the household, the number of rooms in the house, the type of household, and whether or not the child has a sibling aged between 0-5.

In contrast to the two-valued (zero or one) logit or probit models, the ordered probit model in which the dependent variable is formed in ordered form is preferred. Because the response options used to determine the level of education consist of options such as primary school, junior high school, high school and university in ordered form.

The ordered probit model is constructed as a hidden variable regression model, such as a two-result probit model. In the equation below:

$y^*=x'b+e$

y^* is the hidden variable and is defined as:

$y=0$ if $y^* \leq 0$

$y=1$ if $0<y^* \leq \mu_1$

$y=J$ if $\mu_{j-1} \leq y^*$

μ's indicating the threshold values are unknown parameters that can be estimated with the ordered probit model. The following probabilities can be obtained with the assumption that the faults are normally distributed in the ordered probit model (Greene, 2002). All of these possibilities are positive and they should be in the form of $0<\mu_1<\ldots<\mu_{J-1}$:

Prob(y=0|x)=$\theta(-x'\beta)$

Prob(y=1|x)= $\theta(\mu_1 - x\beta) - \theta(-x\beta)$

Prob(y=J|x)=1- $\theta(\mu_{J-1} - x\beta)$

In this model, the marginal effects of the independent variables are not equal to the coefficients. The marginal effects can be expressed as follows for the three categorized ordered cases with a threshold parameter. The marginal effects of the change in the independent variables are calculated as follows (Greene, 2002):

$$\frac{\partial \text{Prob}(y=0|x)}{\partial x} = -\theta(-x'\beta)\beta$$

$$\frac{\partial \text{Prob}(y=1|x)}{\partial x} = [\theta(-x'\beta)\theta(\mu - x'\beta)]\beta$$

$$\frac{\partial \text{Prob}(y=2|x)}{\partial x} = \theta(\mu - x'\beta)\beta$$

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In the ordered probit model, the coefficients show the direction of the relationship, but the marginal effect of a change in the independent variable on the dependent variable of the model can not be interpreted over the forecast results. For this reason, marginal effects are obtained for each possibility of the dependent variable.

DESCRIPTIVE STATISTICS

According to the descriptive statistics included in Annex Table 1, there is no significant difference between the primary and secondary school samples classified by gender in terms of continuous variables. The educational status of parents differ in primary and secondary education for both genders. When we look at the educational level of the parents, it is seen that the primary school graduates are predominant, followed by illiterate mothers. The rate of mothers who graduated from university varies between 2% and 7%, and the sample with the highest university graduation in mothers is examined for girls of primary school with 7.9%. When the education level of the father is examined, it is seen that the majority of the primary school graduates are in the majority, but the ratio of the illiterate father is very low compared to the illiterate mother. The share of university graduates is between 4% and 13%. Illiterate mothers in all samples are more than percent of literate mothers. It can be said that the education levels of parents are not balanced for all samples.

According to father's employment status, it can be seen that unemployment is quite high. The sample with the lowest rate of unemployment for the father is the primary education demand for males. Generally, the percentage of paid employees and business owners are close to each other. Unemployment rates are particularly high for the mother and are not considered to reflect the general picture of Turkey. Working mothers seem to be mostly business owners, while the rate of paid work for mothers is around 5-6% and the rate of having a job is between 40-44%. The ratio of self-employed mothers and fathers in agriculture is very close to each other and varies between 15-21%.

Looking at the household characteristics, it is seen that the majority of the households are home to all samples. There is an increase in primary education from secondary education to boys from girls and boys. 24% of the girls and 21.8% of the boys live in large families. This ratio increases to 28.2% for girls and 28.4% for boys in the secondary education sample.

Table 1 shows the distribution of education levels of children by gender. In all samples, it is seen that there are more girls than boys who do not graduate from any school. In addition, children were mostly finished primary school. The proportion of non-graduates from any school is increasing in the transition from primary to secondary education regardless of gender.

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Table 1. *Education Levels by Gender.*

Primary Education (Eight Years) Age 14-17		
Education Level	**Girl (%)**	**Boy (%)**
Did not graduate from any school	8.25	3.27
Primary school	54.36	57.28
Finished primary education	37.39	39.45
Secondary Education (High School) Age 18-20		
Did not graduate from any school	11.39	7.59
Finished primary education	48.43	55.42
Finished secondary education	40.19	36.98

Source: All the data are gathered from World Development Indicators (WDI) database.

ESTIMATION RESULTS

According to the results in Annex Table 2, education level of mother and father is among the most important determinants of primary education claim. These variables are statistically significant in the samples in which primary school demand is examined have a positive effect on primary school demand. In the model in which the demand for primary education for girls is examined, variables such as the number of the parents, the number of the rooms of the mother and the father, the number of the rooms and the household characteristics and the siblings of the child are statistically significant. Household expenditure positively affects primary education demand. The education level of the parents is also significant in the model in which the demand for primary education is examined. The fact that the father is unemployed by his / her parent characteristics does not have any significant effect on the household demand, the household income, the number of households, the household type, the type of household and the primary education requirement of the child's brother.

If we look at the marginal effects of the primary education requirement in Annex Table 3, the education level of the mother and the father for girls is very important. For example, the probability of a girl completing primary education is 21% for parents and college graduates. The probability of a male child completing primary education is 14% for parents and university graduates. In general, the fact that your father is educated on the primary education request has greater influence than the mother is educated. This result is not surprising for a developing country like Turkey, which has a patriarchal family structure. The marginal effects of a mother's and father's education when the girl completes her primary education are higher than those of the boy's completion of primary education. This result, which is consistent with the available literature (see Tansel (2002) and Kilic (2012)), is linked to two factors: low educational level families may be living in areas where they are obstructed by girls 'education, or these families may be unaware of the social value of girls' education. The factor that most influences the probability of a girl completing primary education is the education level of her father. The fact that the mother is a primary school, junior high school and high school graduate has an effect on the likelihood of girls completing primary education. It seems that the fact that her mother is a university graduate has greatly increased her willingness to read girls.

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Looking at the employment situation, there is no significant effect on the probability that the mother is unemployed or paid worker, but the possibility of the boy finishing primary education is increased by 6% if the mother is unemployed or paid. While being a paid worker has no significant effect on the probability of completing her primary education, she negatively affects the likelihood of completing her primary education. This can be attributed to the fact that the gap between the minimum wage and the poverty line is quite high. A father and a son working at a minimum wage, to work in business. The opportunity cost of studying a male child who can make income for a child can be quite high for a paid father. The fact that parents work in their own accounts in agriculture is significant in all samples; but the fact that the mother works on her own in agriculture raises the likelihood of completing her primary education without any gender by about 6-8%, reducing the father's own working in agriculture by about 3-5%. This can be explained by the increase in the ability of a mother working in agriculture to read the child, and the tendency of the father to direct the child to work in agriculture.

Looking at the household characteristics, the probability of girls' finishing primary education increases by 7% as household expenditure increases. The positive relationship between expenditure and educational demand is one of the consistent results in the literature. As the number of inhabitants increases, the probability of completing the primary education of the girl is 2.9%. This result can be explained by the fact that the girls are directed to domestic affairs. Household spending and the number of people living in the household are statistically insignificant when the boy completes primary education. Girls living in large families are 8% more likely to finish primary education than those living in large families.

According to Annex Table 4, where the ordered probit model estimation results for secondary education are included, it is seen that the educational level of parents is the most important factor determining education demand. Household characteristics were statistically significant except for the siblings for girls. In the sample for male children, it is insignificant to be living in a large family and being a brother from household characteristics. The number of people in the household affects the education demand of the girl especially at a very high level.

Annex Table 5 shows marginal effects for secondary school children and boys. The level of education of the father has a greater influence on the likelihood of children completing the school than the educational level of the mother. The level of education of the father is generally regarded as a direct measure of the level of income and influences the child's educational demand through income. The level of education of the mother has a direct effect on the personality traits and abilities of the child and refers to the labor that is spent in the child's work (King and Lillard, 1983). While the mother's university graduation increases the likelihood of the girl completing secondary education by 12%, the boy increases the likelihood of completing secondary education by 24%. Whatever the level of education of the mother, the girl has more influence over the possibility of the child completing secondary education than the completion of the male child. The level of education of the father is more influential than the level of education of the mother when the boy completes secondary education.

For girls, the unemployment of the mother increases the likelihood of completing secondary education. It may seem that the mother who does not

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work is motivated to send the child to school and at the same time, it may not be seen as an individual (girl child) who can be employed at home after the girl has passed the elementary education threshold. The fact that the father is unemployed, on the contrary, reduces the probability of the girl child finishing secondary school, this situation can be interpreted as the fact that for the unemployed father, the education costs of the girl child in the age of secondary school is heavy, or under these circumstances, education for the girl child at the primary education level may be sufficient. When a mother is a paid worker, the probability of the girl completing secondary education increase by 21% with the consciousness of being put into business life. The fact that the mother is unemployed for boys does not have a significant effect on educational demand. The fact that the father is a paid worker increases the probability of a boy finishing secondary education by 6.8%. The wage worker variant, which had a negative effect on the possibility of completing the primary education of the boy when the primary education request was examined, was explained by directing the child to marginal jobs. At the completion of secondary education, there is no such orientation for a child between the ages of 18-20.

The fact that the mother works on her own in agriculture is insignificant on the possibility of the girl finishing secondary school. The fact that your father works on his own in agriculture reduces the chances of the girl finishing secondary education by 9%. This can be explained by the support of the girls' families as unpaid family workers in an agricultural laborer's family, as described by Rankin and Aytac (2006). For male children, these variables are statistically insignificant.

According to the household characteristics, the probability of finishing secondary education is 7% and the possibility of finishing secondary education is 36% when the household expenditure is increased. Increasing the likelihood of household spending being educated is an indication of the increase in household income. The number of people in the household reduces the chances of completing secondary education regardless of gender. Especially for girls, the reduction effect is higher, which can be explained by the fact that girls are working at home in crowded families. While housekeeping and the number of rooms in the home do not have a significant impact on compulsory primary schooling, girls are increasing the likelihood of finishing secondary education. This can be explained by the higher education costs of children at secondary level and the financial support of their families by the state or various institutions during eight years of compulsory education. Such support at the secondary school level may decline greatly, which may make the demand for education dependent on the wealth of the families.

CONCLUSION

According to the results of the 2014 Household Budget Survey prepared by TURKSTAT, the factors affecting the demand of primary and secondary education in Turkey were examined by gender. Four separate samples for girls and boys between the ages of 14-17 for elementary school students and boys and girls between the ages of 18-20 for secondary education were created. The socio-economic and cultural factors affecting the child's educational status are independent variables, which are education, employment status, home ownership, sibling presence of the child, household expenditure, number of people living in the household, number of rooms in the

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house and living as a large family member of the child. The educational status dependent variable was conducted from the predictors of the ordered probit model, since it was more than one categorical in the ordered form. The probability effects on the educational status of the independent variables are interpreted as follows from the estimators explaining the marginal effects.

Without gender discrimination, the most important determinants of primary and secondary demand are the education level of parents. When the effect of the education level of the parents is compared, the level of education of the father mainly has a great influence on the educational demands. This results in the generational dimension of the level of education and the need to raise the level of education for future generations. Therefore, it imposes the responsibility to establish social peace by abolishing the obligation to invest in human beings and discriminatory approaches.

When the factors determining primary and secondary education demand are compared in general, the employment situation of mother and father for primary education request is mostly unchanged and it is meaningless in terms of model findings. Again, since the primary education is implemented as compulsory education for eight years, the income level of the family is ineffective on educational demands. The fact that the household is the homeowner and the wealth figures expressed by the number of rooms in the house are generally meaningless, show the ineffectiveness of the financial situation for the primary education request.

In the case of secondary education, it is seen that both the employment status and the wealth indicators are effective. When evaluated in terms of agricultural efficiency, it is seen that primary school students are affected because they work for their own account in agriculture and this effect is not observed in secondary school. This can be a factor for a self-employed father in agriculture to reduce the likelihood of finishing primary education by directing their children to work in agriculture. Policy makers and decision-makers have important tasks when we consider the need to identify children who work as unpaid family workers in agriculture to prevent this, and that these children should be directed to education.

From the point of view of the household characteristics, it is seen that the number of people living in the dwelling reduces the demand for education without regard to gender and primary and secondary education demands. In crowded families, it is noteworthy that girls are seen as helping households, while boys are regarded as individuals who provide additional income to the crowded family. In this case, it is necessary to develop support policies for educating children living in crowded families.

If the results of this study are compared with the results of Kilic's (2012) study, especially in terms of method similarity, predictors were obtained in accordance with expectations in terms of gender education determinants in Turkey. However, no comparison was made in this area due to lack of regional data in the 2014 TURKSTAT Household Budget Survey. The results of this study are also consistent with the literature. In summary, according to the descriptive and model estimation results of this study; The most important development is that the increase in the proportion of secondary education in girls is more than the increase in the proportion of boys in secondary education. This result can be considered to be the most important sign of the decrease of the negative factors lead-

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ing to the social and cultural conflicts arising from the gender difference in education in the mid-term. Indeed, if we take into account the transformation process of the closed glance that has emerged in recent years from the gender differences and the causes of the active questioning of women's traditional cultural subjects (the subject of sociology), it is very important to participate in the work life, including the public sphere. The improvement of the educational orientation of girls by gender differences can be considered a key indicator supporting the efforts of women to broaden their freedom of expression and to synthesize traditional culture and modern lifestyle. This can be interpreted as a gradual decrease in the potential loss of human capital in the country and a positive development in socio-psychological change in society.

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APPENDICES

ANNEX Table-1

Continuous Variables				
	Primary Education (eight years) Age 14-17		**Secondary Education (High School) Age 18-20**	
Variables	**Girl**	**Boy**	**Girl**	**Boy**
Household Expenditure (Log)				
(St. Dev.)	.2708	.2438	.2503	.2375
(Min.)	2.001	2.391	2.6231	2.8347
(Max.)	4.596	4.151	4.2890	4.4457
The Number of People Living in the Household				
(St. Dev.)	2.3387	2.6754	2.7657	2.5194
(Min.)	3	3	3	3
(Max.)	25	25	16	16
The Number of Rooms				
(St. Dev.)	.9194	.9652	.9012	.8438
(Min.)	1	1	1	1
(Max.)	11	11	9	8
Categorical Variables (Percent)				
Educational Status of Father				
No educational qualification	9.36	9.49	13.04	14.87
Primary school (5 years)	49.39	54.85	54.48	58.05
Primary school (8 years)	11.16	13.36	13.48	10.88
Secondary school	16.12	13.13	12.11	11.33
University	13.97	9.17	6.89	4.87
Educational Status of Mother				
No educational qualification	28.59	33.25	38.78	40.69
Primary school (5 years)	47.01	50.08	48.28	47.97
Primary school (8 years)	5.24	6.06	4.39	4.21
Secondary school	11.24	7.21	6.45	5.04
University	7.92	3.40	2.10	2.09
Employment Status of Father				
Unemployed	21.22	12.64	16.82	17.38
Paid	39.47	47.25	39.10	40.12
Owner	39.31	40.11	44.08	42.5
Employment Status of Mother				
Unemployed	67.98	63.82	64.12	61.87
Paid	4.99	5.82	5.48	6.01
for	27.03	30.36	30.4	32.12
Mother Works for Her Own Account in Agriculture				
Yes	14.30	17.85	19.46	21.69
No	85.70	82.15	80.54	78.31
Father Works for His Own Account in Agriculture				
Yes	16.01	17.96	19.75	21.58
No	83.99	82.04	80.25	78.42
Home Ownership				
Yes	62.8	66.63	71.51	72.12
No	37.2	33.37	28.49	27.88
Large Family				
Yes	24	21.8	28.23	28.40
No	76	78.2	71.77	71.60
Sibling Presence (Age 0-5)				
Yes	9.17	4.75	4.35	4.10
No	90.83	95.25	95.65	95.90

Source: All the data are gathered from World Development Indicators (WDI) database.

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ANNEX Table-2

Primary Education Demand Estimation Results for the Ordered Probit Model		
Dependent Variable: Education Status		
Independent Variables	**Girl**	**Boy**
Parental Characteristics		
Father primary (5 years) school graduate	.4970*** (.0529)	.2749*** (.0586)
Father primary (8 years) school graduate	.6583*** (.0670)	.2993*** (.0727)
Father secondary school graduate	.5223*** (.0713)	.2934*** (.0758)
Father university graduate	.5217*** (.0847)	.3574*** (.0906)
Mother primary (5 years) school graduate	.2610*** (.0395)	.1903*** (.0421)
Mother primary (8 years) school graduate	.2606*** (.0743)	.3972*** (.0784)
Mother secondary school graduate	.3192*** (.0769)	.3413*** (.0790)
Mother university graduate	.5258*** (.1146)	.3756*** (.1147)
Father unemployed	.0876 (.0566)	.0238 (.0591)
Father paid	-.0211 (.0403)	-.0697* (.0421)
Mother unemployed	.0071 (.0749)	.1807*** (.0735)
Mother paid	-.0446 (.0771)	.1543*** (.0759)
Mother works for her own account in agriculture	.2343** (.0800)	.1552** (.0795)
Father works for his own account in agriculture	-.0974* (.0551)	-.1526*** (.0593)
Household Characteristics		
Household expenditure (Log)	.1628** (.0721)	.0007 (.0737)
The number of people living in the household	-.0785*** (.0075)	-.0017 (.0080)
Homeownership	.0077 (.0345)	.0288 (.0362)
The number of rooms in house	-.0210 (.0182)	.0937*** (.0183)
Living in large family	.2261*** (.0415)	.0358 (.0430)
Sibling presence (age 0-5)	.0865 (.0618)	.0223 (.0746)
_cut1	-.8055	-1.0610
_cut2	1.067	1.1541
Log-likelihood	-5310.71	-4568.79
Pseudo R squared	0.054	0.022
LR chi2 (20)	606.09	205.33
N	6238	5912

Source: All the data are gathered from World Development Indicators (WDI) database.

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ANNEX Table-3

Marginal Effects for Primary Education Demand						
Dependent Variable: Education Status						
	Girl			**Boy**		
Independent Variables	Did not graduate from any school	Primary school student	Finished primary education	Did not graduate from any school	Primary school student	Finished primary education
Parental Characteristics						
Father primary (5 years) school graduate	-.0657*** (.0077)	-.1171*** (.0119)	.1829*** (.0188)	-.0172*** (.0039)	-.0876*** (.0184)	.1049*** (.0221)
Father primary (8 years) school graduate	-.0568*** (.0043)	-.1998*** (.0224)	.2566*** (.0258)	-.0147*** (.003)	-.1026*** (.0260)	.1173*** (.0288)
Father secondary school graduate	-.0476*** (.0048)	-.1563*** (.0237)	.2040*** (.0280)	-.0145*** (.0031)	-.1005*** (.0271)	.1150*** (.0300)
Father university graduate	-.0465*** (.0054)	-.1575*** (.0284)	.2041*** (.0333)	-.0164*** (.0032)	-.1242*** (.0329)	.1407*** (.0359)
Mother primary (5 years) school graduate	-.0327*** (.0051)	-.0650*** (.0099)	.0977*** (.0148)	-.0115*** (.0026)	-.0614*** (.0136)	.0730*** (.0161)
Mother primary (8 years) school graduate	-.0271*** (.0064)	-.0738*** (.0231)	.1009*** (.0294)	-.0172*** (.0025)	-.01393*** (.0288)	.1566*** (.0310)
Mother secondary school graduate	-.0319*** (.0061)	-.0922*** (.0246)	.1241*** (.0305)	-.0156*** (.0028)	-.0118*** (.0288)	.1344*** (.0314)
Mother university graduate	-.0445*** (.0062)	-.1619*** (.0392)	.2064*** (.0450)	-.0162*** (.0035)	-.1319*** (.0422)	.1482*** (.0455)
Father unemployed	-.0103 (.0063)	-.0229 (.0153)	.0332 (.0217)	-.0014 (.0034)	-.0077 (.0193)	.0091 (.0228)
Father paid	.0026 (.005)	.0053 (.0107)	-.0079 (.0151)	.0042* (.0025)	.0226* (.0136)	-.0268* (.0162)
Mother unemployed	-.0008 (.0093)	-.0018 (.0188)	.0026 (.0281)	-.0115** (.0049)	-.0573** (.0228)	.0688** (.0277)
Mother paid	.0056 (.0100)	.0110 (.0186)	-.0166 (.0286)	-.0084** (.0037)	-.0515** (.0261)	.0600** (.0298)
Mother works for her own account in agriculture	-.0261*** (.0080)	-.0636*** (.0232)	.0898*** (.0311)	-.0085** (.0040)	-.0517** (.0272)	.0603** (.0312)
Father works for his own account in agriculture	.0126* (.0075)	.0235* (.0127)	-.0362* (.0202)	.0101** (.0042)	.0475*** (.0170)	-.0577*** (.0211)
Household Characteristics						
Household expenditure (Log)	-.0202** (.0089)	-.0409** (.0181)	.0612** (.0271)	.0000 (.0044)	.0002 (.0238)	-.0002 (.0283)
The number of people living in the household	.0097*** (.0009)	.0197*** (.0019)	-.0295*** (.0028)	.0001 (.0004)	.0005 (.0026)	-.0006 (.0030)
Homeownership	-.0009 (.0043)	-.0019 (.0086)	.0029 (.0129)	-.0017 (.0022)	-.0092 (.0116)	.0110 (.0138)
The number of rooms in house	.0026 (.0027)	.0052 (.0046)	-.0079 (.0068)	-.0056*** (.0011)	-.0303*** (.0059)	.0360*** (.0070)

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Table 3 continued

Living in large family	-.0256*** (.0043)	-.0607*** (.0118)	.0864*** (.0160)	-.0021 (.0025)	-.0116 (.0141)	.0138 (.0166)
Sibling presence (age 0-5)	-.0101 (.0068)	-.0227 (.0167)	.0329 (.0237)	-.0013 (.0043)	-.0072 (.0244)	.0086 (.0288)

Source: All the data are gathered from World Development Indicators (WDI) database.

ANNEX Table-4

Secondary Education Demand Estimation Results for the Ordered Probit Model		
Dependent Variable: Education Status		
Independent Variables	**Girl**	**Boy**
Parental Characteristics		
Father primary (5 years) school graduate	.5649*** (.0774)	.3689*** (.0723)
Father primary (8 years) school graduate	.7865*** (.1006)	.7443*** (.1025)
Father secondary school graduate	.9376*** (.1126)	.9607*** (.1056)
Father university graduate	1.014*** (.1553)	1.350*** (.1661)
Mother primary (5 years) school graduate	.5439*** (.0624)	.3163*** (.0602)
Mother primary (8 years) school graduate	.5007*** (.1293)	.3460*** (.1308)
Mother secondary school graduate	.7484*** (.1433)	.6444*** (.1375)
Mother university graduate	.3108 (.2224)	.6362*** (.2404)
Father unemployed	-.2995*** (.0831)	.1807** (.0812)
Father paid	-.0514 (.0641)	.2314*** (.0627)
Mother unemployed	.3544*** (.1256)	-.0982 (.1341)
Mother paid	.5210*** (.1258)	-.6011*** (.1314)
Mother works for her own account in agriculture	-.0898 (.1304)	-.0105 (.1328)
Father works for his own account in agriculture	-.2553*** (.0851)	.1254 (.0767)
Household Characteristics		
Household expenditure (Log)	.1993* (.1105)	.9863*** (.1122)
The number of people living in the household	-.1820*** (.0122)	-.0858*** (.0126)
Homeownership	.2233*** (.0581)	-.1262** (.0584)
The number of rooms in house	.0762*** (.0299)	.0550* (.0294)
Living in large family	.4892*** (.0668)	-.0623 (.0598)

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Table 4 continued

Sibling presence (age 0-5)	-.1036 (.1151)	-.0019 (.0115)
_cut1	-.4119	1.8438
_cut2	1.5602	4.0025
Log-Likelihood	-2088.11	-2135.13
Pseudo R squared	0.2227	0.1661
LR chi2 (20)	1196.70	850.45
N	2759	2877

Source: All the data are gathered from World Development Indicators (WDI) database.

ANNEX Table-5

Marginal Effects for Secondary Education Demand						
Dependent Variable: Education Status						
	Girl			**Boy**		
Independent Variables	Did not graduate from any school	Finished primary education	Finished secondary education	Did not graduate from any school	Finished primary education	Finished secondary education
Parental Characteristics						
Father primary (5 years) school graduate	-.0670*** (.0103)	-.1385*** (.0182)	.2055*** (.0271)	-.0323*** (.0069)	-.1022*** (.0193)	.1346*** (.0257)
Father primary (8 years) school graduate	-.0568*** (.0057)	-.2478*** (.0342)	.3047*** (.0379)	-.0375*** (.0040)	-.2515*** (.0365)	.2891*** (.0390)
Father secondary school graduate	-.0614*** (.0057)	-.2992*** (.0374)	.3607*** (.0405)	-.0433*** (.0041)	-.3257*** (.0359)	.3690*** (.0377)
Father university graduate	-.0580*** (.0055)	-.3292*** (.0500)	.3873*** (.0530)	-.0423*** (.0038)	-.4469*** (.0440)	.4893*** (.0448)
Mother primary (5 years) school graduate	-.0610*** (.0076)	-.1395*** (.0164)	.2006*** (.0225)	-.0259*** (.00519)	-.0912*** (.0175)	.1172*** (.0222)
Mother primary (8 years) school graduate	-.0388*** (.0068)	-.1567*** (.0450)	.1955*** (.0511)	-.0214*** (.0060)	-.1125** (.0461)	.1340*** (.0519)
Mother secondary school graduate	-.0501*** (.0060)	-.2412*** (.0496)	.2913*** (.0541)	-.0320*** (.0043)	-.2196** (.0499)	.2517*** (.0532)
Mother university graduate	-.0273* (.0149)	-.0930 (.0736)	.1203 (.0883)	-.0306*** (.0061)	-.2182** (.0875)	.2488*** (.0930)
Father unemployed	.0392*** (.0127)	.0671*** (.0157)	-.1063*** (.0279)	-.0133** (.0054)	-.0549** (.0258)	.0683** (.0312)
Father paid	.0057 (.0072)	.0133 (.0165)	-.0191 (.0237)	-.0190*** (.0052)	-.0667*** (.0181)	.0857*** (.0231)
Mother unemployed	-.0431*** (.0168)	-.0853*** (.0277)	.1284*** (.0442)	.0079 (.0106)	.0286 (.0395)	-.0365 (.0501)
Mother paid	-.0439*** (.0082)	-.1576*** (.0418)	.2016*** (.0493)	.0712*** (.0213)	.1286*** (.0177)	-.1998*** (.0377)

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Table 5 continued

Mother works for her own account in agriculture	.0104 (.0159)	.0225 (.0314)	-.0330 (.0473)	.0008 (.0110)	.0030 (.0381)	-.0039 (.0491)
Father works for his own account in agriculture	.0323*** (.0121)	.0593*** (.0175)	-.0916*** (.0293)	-.0096* (.0055)	-.0374 (.0236)	.0471 (.0291)
Household Characteristics						
Household expenditure (Log)	-.0222* (.0124)	-.0517* (.0288)	.0740* (.0410)	-.0810*** (.0104)	-.2848*** (.0338)	.3659*** (.0416)
The number of people living in the household	.0203*** (.0017)	.0472*** (.0037)	-.0676*** (.0045)	.0070*** (.0011)	.0247*** (.0037)	-.0318*** (.0046)
Homeownership	-.0270*** (.0077)	-.0542*** (.0132)	.0812*** (.0206)	.0098** (.0043)	.0373** (.0177)	-.0472** (.0220)
The number of rooms in house	-.0085*** (.0038)	-.0198*** (.0078)	.0283*** (.0111)	-.0045* (.0024)	-.0159* (.0085)	.0204* (.0109)
Living in large family	-.0467*** (.0060)	-.1396*** (.0207)	.1864*** (.0256)	.0052 (.0051)	.0177 (.0168)	-.0230 (.0219)
Sibling presence (age 0-5)	.0124 (.0149)	.0252 (.0262)	-.0377 (.0411)	.0001 (.0095)	.0005 (.0332)	-.0007 (.0421)

Source: All the data are gathered from World Development Indicators (WDI) database.