The Effect of Health Status and Perception of Disabling Health Conditions over the Life Course on the Educational Aspirations of Ethiopian Youth

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Introduction

The adolescent years are a crucial formative stage in the development of individual identity, life expectations, and motivations; all of which are key factors in the determination of economic success or failure in adulthood (Mortimer & Shanahan 2003). Educational attainment has been shown to contribute to increased human development in the developing world; educational aspirations of youth provide a vital indicator of the future prospects for socioeconomic development. Individual, family and community level factors such as neighborhood quality and access to institutions are essential predictors of youth's educational investment. In addition to these structural factors, we argue that adolescent educational aspirations will be lower when (a) adolescent expectations of poor health in the future lead them to discount the value of education for employment and earnings over the life course, and (b) young women who believe in gender role equality are more likely to expect an employment and earning return to education, increasing their desire for higher education. We test these hypotheses using data from a study of educational aspirations of adolescents aged 13-17 from an ongoing unique longitudinal survey of families and youth in southwestern Ethiopia.

Background and Hypotheses

Existing research linking educational aspirations with social and economic outcomes come largely from the United States and Europe. The most prominent of these studies is the Wisconsin Longitudinal Study which examined the effects of family socioeconomic status, education levels of the parents, and family type on the educational aspirations of high school seniors. Follow-up studies of this cohort confirmed that educational aspirations are strongly related to educational attainment, occupational success, and lifetime earnings (Sewell 1986; Sewell and Shah, 1967; Sewell and Hauser, 1980). According to the status attainment theory that

motivates this research, education attainment is a behavioral outcome of a socialization mechanism through which an individual is influenced by their families and social networks, and as a result of such a status socialization process; imitation, self-reflection, and adoption of surrounding norms influence educational aspirations (Morgan, 1998; Heller (1982).

In developed nations it has been argued that educational aspirations are formed strategically by taking into consideration exogenous sources of constraints which include opportunity and direct costs of alternative choices (Morgan, 1998). In such a cost/benefit analysis, adolescents include labor markets incentives (for example, expected earnings returns on education plans), and the availability of resources to cover the costs of education (for example family wealth). These educational plans, which can be indirectly measured by a latent variable, education aspirations, eventually drive education attainment (Spenner and Featherman 1978). Wilson *et al.* (2005) find that youths' expected returns after a successful completion of their education is an important predictor of their educational expectations, even after taking into consideration other predictors (such as such as family socioeconomic status, parental influences, and government's education policy decisions).

There are a handful of studies that examine factors that determine youth's education aspirations in low income countries. Buchmann and Hannum, (2001) provide a review of the available literature on adolescents' educational aspiration and attainment in the developing nations. They find that family socioeconomic status and family size are important determinants of educational attainment. Studies in South Africa and Uganda showed that family socioeconomic status is a crucial determinant of educational aspirations (Adams *et al.* 1987; Beutel, *et al*. 2007). Children from poverty-constrained rural households are more likely to depend on domestic labor from their children to maximize family productive capacity (Grootaert

and Patrinos, 1999, Cockburn, 2001). In a study conducted in Northwestern Tanzania, Burke and Beegle (2004) conclude that reducing demand for child labor within households would increase school attendance. As schools have become increasingly available in Ethiopia and systems of public transportation have improved, family needs and resources may play an increasingly important role in the educational aspirations of their children. Based on these findings, this study of the educational aspirations of Ethiopian adolescents includes indicators of the extent to which community context provides access to schools and opportunities for paid employment. We include indicators of socioeconomic resources of households, and mothers' and fathers' educational aspirations for their child. We also include indicators of the extent to which families have agricultural and economic production assets which are likely to increase the need for child labor in adolescence and the early years of adult life.

In South Africa the effects of socioeconomic background and academic performance on educational aspirations vary by ethnic group, with adolescents from disadvantaged groups having lower educational aspirations (Beutel *et al.,* (2007). Our models include an indicator that an adolescent is Muslim, a status which may be associated with discrimination in schools. Most Muslims attend schools with instruction in Oromo. Education at the high school level in Ethiopia is officially in English, effectively blocking the ability of many Muslims to enroll in higher levels of education.

In a study that models the relationship between poverty, schooling and gender inequality in Ethiopia and Guinea, Colclough and Tembon (2000) find evidence of cultural practices that limit school attendance and performance of girls relative to boys. Similarly, in another Ethiopia-based study, Rose and Al-Samarrai (2001) find that the effect of individual and household characteristics on the probability of attending and completing primary school vary by gender.

Wilson *et al*, (2005) underscore the role of youths' other choices such as fertility and marital plans that are very likely to be made concurrently with educational and occupational plans. Getahun (2000) studied the educational aspiration of 239 adolescents in Ethiopia; this research showed that occupational aspirations of youth are highly correlated with their educational aspirations. Plans about marriage and family life are a consideration when these Ethiopian adolescents make their educational plans. It is our expectation that the traditional life roles of Ethiopian women are incompatible with a high level of education; we hypothesize those adolescent girls who hold traditional views about the role of women will discount the expected economic returns to education. Based on this research we hypothesize that, for women, a key factor in life course planning is the extent to which they expect they will have adult life opportunities for social and economic achievement outside of traditional family roles.

Partly due its effect on cognitive ability and hence school performance, nutritional deficits may limit education enrollment (Alderman *et al*. 1997). Behrman (1996) maintains that there is a positive association between child health and early nutrition and education achievement even though the causality is hard to establish. Taking into consideration the high HIV prevalence in the Sub-Saharan Africa region, studies have also found a connection between health at the general society level, and with school enrollment and absenteeism (Case *et al.,* 2004; Ainsworth *et al*., 2002). Based on this research we treat current health status as a predictor of school enrollment. We include a variable indicating stunting to measure early nutritional deprivation which might affect academic skills and the ability to attend school. We measure the adolescents' perception of health risks in the future to test the hypothesis that youth (who are enrolled in school) will be less likely to seek a higher level of education if they think they are

highly vulnerable to poor health in their future life course which will limit their occupational and earnings potential.

Figure 1 provides an analytic summary of the hypothesized relationships of school enrollment and educational aspirations to family resources and the community environment among adolescents in Ethiopia. This figure illustrates how adolescent beliefs about future health risks and gender equality are expected to modify adolescents' calculations about the perceived economic returns to education, and in turn, their aspirations for high levels of education. One noteworthy aspect of this research is that the current cohort of adolescents are the first who have experienced the expansion of the Ethiopian public secondary school system, and the development of private and public institutions of higher education. This is the first cohort for whom significant secondary and even college education is possible. The formation of educational aspirations described in this paper is a new life course process; there is no prior family or community experience on which these adolescents and their parents can model the formation of educational aspirations. The Ethiopian case thus provides a unique opportunity to provide insights into the ways in which educational aspirations among adolescents in developing nations are formed.

Research Methods

Data

The data for this paper come from the Jimma Longitudinal Family Survey of Youth (JLFSY) conducted by investigators from the School of Public Health at Jimma University in Ethiopia and the Population Studies and Training Center of Brown University. The JLFSY includes 3,716 randomly selected households located in the city of Jimma Town, with a population of 120,000, and in three nearby towns and surrounding rural settlements.

Jimma (Jima) Town is located approximately six to eight hours driving time to the southwest of the capital of Ethiopia, Addis Ababa (Map 1). The region is semi-tropical with low-lying mountains and hills, and abundant seasonal rainfall. Agriculture is the basis for the economy, with coffee, chat, corn and cattle major sources of income. The rural communities are populated by Oromo, who are predominantly Muslim. The towns and the city of Jimma are ethnically and religiously diverse. Despite a favorable environment for agriculture, the economic situation of residents of Jimma Zone has been significantly depressed by the world-wide drop in prices for coffee. The reliance on the sale of agricultural commodities reduces economic stability in Jimma Zone. While other cities in Ethiopia are growing rapidly and have experienced considerable economic expansion, the economic situation in Jimma Town has stagnated.

A household questionnaire was completed with the household head and spouse of the head. Up to two youth age 13-17, one male and one female, were then randomly selected from each household for individual interviews. A total of 2,194 adolescents were interviewed in the first round of the survey conducted between October 2005 and February 2006. Sample details are provided in Table 1. The study design includes the re-interview of households and adolescents every twelve months for a period of at least five years. In this paper we use data from the first round of the household and adolescent interviews (see Table 1).

The household questionnaire collected background information including migration experience for all current household members and adult children of the household head who have established independent households. The questionnaire also collected information on the residential location of relatives of the head and spouse, participation in exchange networks, and measures of economic assets and well-being. The adolescent questionnaires collected

information on schooling, employment, perceptions of parents' expectations, aspirations for the future, health and health care, nutrition,

Variable Definitions and Measures

Youth currently enrolled in school are selected from among all youth (91%); nearly all of the persons not now in school (9%) were never enrolled or enrolled for only one or two years. The outcome of interest in this paper is whether or not an adolescent aspires to a high level of education. As noted above, adolescents in developing countries typically grossly overestimate their educational prospects; this population of Ethiopian adolescents is no exception. Despite the unrealistic level of the educational aspirations, however, it has been shown that adolescents with high levels of educational aspirations do achieve significantly more years of schooling. This analysis identifies those adolescents.

Definitions of created variables are shown in Table 2. The means and standard deviations of these variables are provided in Table 3. There are substantial differences between adolescents with high educational aspirations and those with low educational aspirations. The major difference between the two groups relate to the educational aspirations of parents for the adolescents (as reported by the adolescents). Fewer than 10% of adolescents with low educational aspirations report their parents want them to get 16 or more years of education compared to two-thirds of the adolescents with high educational aspirations. Adolescents with high educational aspirations have somewhat fewer siblings, higher household socioeconomic status, and fewer agricultural assets. In addition those with low educational aspirations more often are female and Muslim; they are more traditional in their attitudes about gender equality.

Model Estimation

To correct for the selectivity of students currently enrolled in school, we use a two-step Heckman selection model to appropriately assess the effects of the enumerated factors on educational aspirations. In the first step of the model we estimate the likelihood of being in school, which we include as a covariate in the second stage in which we estimate a model predicting the likelihood that an adolescent has a high level of education (i.e., is in the top quartile of the educational aspirations measure). We estimate this two step model for the entire population of adolescents and also estimate separate models for girls and boys.

More formally, as derived in Heckman (1976) and Van de Ven & Van Pragg (1981), and quoted in the *STATA* Manual, the Probit version of the Heckman Selection model assumes that the underlying relationship can be expressed using a regression equation of the form

$$y^*_j = \mathbf{x}_j \beta + u_{1j}$$

In the case of this paper, xj is a vector of the predictor variables of educational aspirations, y^*_j, which in our model are the community context, personal characteristics, family resources and constraints, and the possible discount factors (health, health vulnerability, and gender role attitudes). The outcome variable, which is binary categorized by high or low educational aspirations, can be expressed by a Probit equation

$$y_j^{probit} = (y^*_j > 0)$$

But the dependent variable is not always observed; it is only observed for those still in school. That is, the dependent variable for an observation *j* is observed if

$$y_j^{select} = (\mathbf{z}_j\gamma + u_{2j} > 0),$$

the selection equation, where

$u_1 \sim N(0, 1)$, $u_2 \sim N(0,1)$ and $corr(u_1, u_2) = \rho$.

The selection variables in our model are an abbreviated list of the measures of community context, personal characteristics, family resources, and serious illness and disability. All models reported here control for age of the adolescents (in single years) and for rural, small town, and urban residence (which served as a sampling frame).

The Heckman model is advantageous since it produces estimates of the covariate effects on educational aspirations that are not biased by the selective nature of those youth who were still in school at the time of the survey. Approximately ninety percent of the youth in the study were still in school at the time of the survey.

Results

Selection into School Enrollment

The school enrollment variable is largely an indicator of whether young persons have ever attended school rather than an indicator of school dropout among the youth who were enrolled in school (Table 4). School enrollment does not vary between boys and girls; this finding is not surprising since we anticipate that discrimination against girls appears first at the post-primary school level. Girls with nutritional deficits during the first three years of life (i.e., stunting) are less likely to be enrolled in school. Adolescents living in more developed communities with greater access to schools and more economic opportunities are more likely to be enrolled in school. The school enrollment of both boys and girls is limited by poor health--girls with disabilities are much less likely to be enrolled in school as are boys with serious chronic illness.

Determinants of High Educational Aspirations

Step 2 of the Heckman model shows that the educational aspirations of Jimma adolescents are systematically affected by their life course situations (Table 4). Adolescents from

families with greater socioeconomic resources are much more likely to be in the top quartile of educational aspirations than adolescents from poorer families, especially among boys. Unlike prior research on other populations, however, neither the number of siblings nor adolescents' status as the first born child affect their educational aspirations. The agricultural assets of families do not affect the educational aspirations of children. Children from families with business assets (typically a small shop, shoe shine business, and horse or cart for hauling people and products) are less likely to expect high levels of education. This is consistent with research in other populations which show that adolescents who can go directly into the family business are less likely to rely on education for occupational success.

Boys who believe they are vulnerable to future serious illness have reduced educational aspirations; for these boys the lifetime occupational and earnings returns to higher education may be less than expected returns to earlier employment. Adolescent girls will do traditional female work in the households regardless of their sense of vulnerability to illness; their educational aspirations are not responsive to their vulnerability to future illness. The greater sensitivity of the boys to future physical illness may relate to their need to do physical labor.

Adolescent girls have lower educational aspirations than boys. But these lower educational aspirations are only found among girls who hold traditional gender role attitudes. Young girls who believe in gender equality are nearly as likely to aspire to a high level of education as their male counterparts.

As indicated by the test statistics for the models of educational aspirations with and without parental aspirations, mothers' and fathers' desires for their child to receive a college education have a major impact on the adolescents own educational aspirations (net of the effects of personal, family and community factors). Both girls' and boys' aspirations for a high level of

education are highly responsive to their mothers' higher education desires. The children whose fathers have higher educational aspirations for them also are more likely to desire a high level of education, but the effects of fathers' views are not as great as the effects of the mothers' views. Fathers' views are more important for the girls' educational aspirations than for the boys' aspirations.

Parents who encourage their children to get a college education are foregoing immediate economic returns from their children; by maximizing their human capital parents can increase the lifetime economic returns from their children's labor. Mothers are generally more interested than fathers in seeing to their children's health care when sick; in a rapidly changing society such as that in Jimma Zone of Ethiopia it may be that mothers take a stronger initial interest than fathers in improving the quality (i.e., human capital) of their children. It may be the mothers, who are more likely to depend on their children for support in old age, who take a longer run view of the economic returns of children.

Conclusions

These first cohorts of Ethiopian adolescents for whom a secondary school and a college education are possible have developed the high educational aspirations of youth in societies with established education systems. Early life course disadvantage, poor health, and disability are associated with a failure to attend school or with early school withdrawal. As with young persons in other societies, the educational aspirations of young persons are greater when they have access to family resources that will help them achieve these aspirations. Children who are able to directly enter the family business are less reliant on education for lifetime economic success. Adolescents who live in situations in which they are likely to earn high occupational and earnings returns to education have especially high educational aspirations.

Boys believe they will benefit from an advanced level of education; only girls who believe in women's equality with men expect to benefit from an advanced level of education, and it is these girls who have the highest aspirations for an advanced level of education. Adolescents who are fear they will suffer from serious chronic health conditions in the future have lower educational aspirations; for these adolescents the immediate economic returns associated with an earlier termination of schooling may outweigh the lifetime economic returns they expect from an advanced level of education.

These findings are consistent with our hypotheses that (a) adolescent expectations of poor health in the future lead them to discount the value of education for employment and earnings over the life course, and (b) young women who believe in gender role equality are more likely to expect an employment and earning return to education, increasing their desire for higher education. More generally, these findings suggest that adolescent educational aspirations in this population at early stages of development respond to cost/benefit calculations on the parts of adolescents and their families once educational opportunities become available.

As in other developed and developing nations, parental aspirations for their children are extremely important in the development of the adolescents' own life plans. Parents' encouragement that their children take advantage of newly available economic opportunities are a critical factor in the adolescents own decisions to invest in their futures. It is remarkable that, as soon as educational opportunities arise, parents recognize the importance of these opportunities for their children and for family well-being. In other research, we find that parents and children consistently have much lower family size ideals than existing levels of fertility. The introduction of secondary and higher institutions of education in Jimma Zone appear to have triggered a shift of investment strategies of families from high fertility to low fertility with an

emphasis on improved child quality. At the same time, more women have adopted attitudes favoring gender equality and recognize the economic returns to human capital investment apply to girls as well as to boys.

The reality is that the actual educational attainments of these adolescents will fall considerably short of their ideals; nonetheless, it is clear that when the perceived benefits of increased education outweigh the perceived costs, children will obtain the best educations their circumstances permit.

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Map 1. Ethiopia

Figure 1: Analytic summary of the hypothesized relationships of school enrollment and educational aspirations to individual attributes, family resources and the community environment among adolescents in Ethiopia

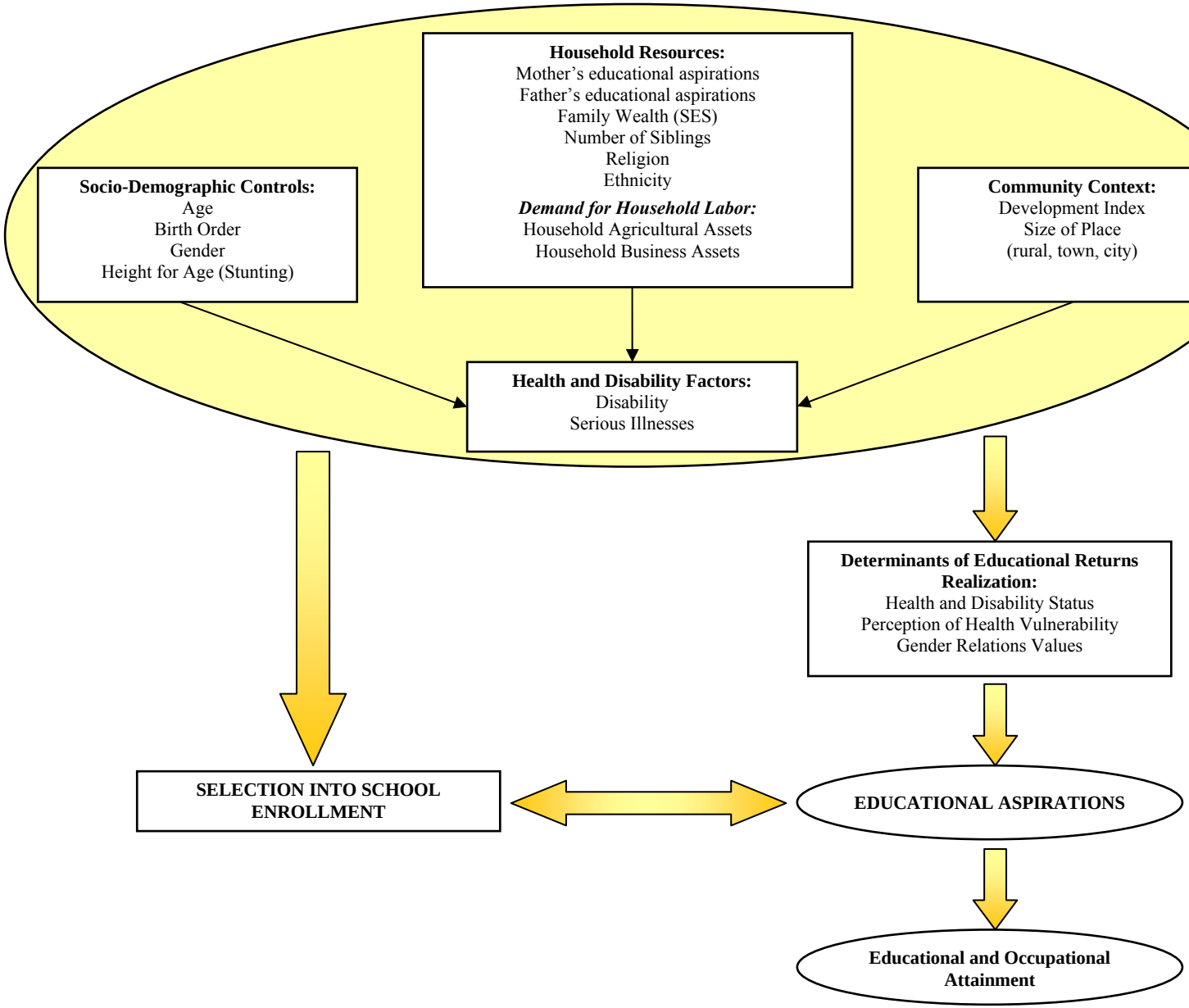

Table 1. Sample Characteristics, Jimma Longitudinal Family Survey of Youth, Jimma Zone Ethiopia, 2005-06.

	Population	Sample Size		
		Households	Boys 13-17	Girls 13-17
Urban				
6 neighborhoods	120,000	1,404	354	392
Semi-urban				
3 towns	3,000-5,000	1,061	301	290
Rural				
9 peasant associations	2,000-4,300	1,226	404	343
Total		3,691	1,059	1,025

Table 2. Variable Descriptions, Jimma Longitudinal Family Survey of Youth, Jimma Zone Ethiopia, 2005-06.

OUTCOME VARIABLE

Educational aspirations: Top quintile of educational aspirations distribution among youth still in school.

PREDICTOR VARIABLES:

(i) HEALTH STATUS

- **Height for age stunting**

Has a height (or length)-for-age more than 2 SD below the median of the World Health Organization (WHO) international reference.

- **Disability**

Has one or more of the following disabilities: hearing problem, vision problem, uses a wheelchair, uses a cane or crutches, has problems walking, has a paralysis, has a mental problem, or has an amputation (range 0-8).

- **Serious illness**

Has one of the following: night blindness, HIV/AIDS, tuberculosis, diabetes, or malaria or has incurred a severe injury from an accident.

- **Health vulnerability**

Index created from factor loadings for expectations of having in the future: night blindness, HIV/AIDS, tuberculosis, diabetes, and malaria. Cronbach's Alpha for the five items is 0.59. High values of the index correspond to high sense of vulnerability to serious illness or disease.

(ii) SOCIODEMOGRAPHIC CONTROLS

- **Gender equality index**

Index created from factor loadings for agreement with six statements (0=Agree, 1=Disagree, 0.5=Don't know) regarding gender roles: a woman should always listen to her husband, normally a man should not have to do housework, marriage by abduction is acceptable, the husband should have the final say in all major family matters, there is nothing a woman can do if her husband wants to have a mistress, and female circumcision is a practice that should continue. Cronbach's Alpha for the six items is 0.58. High values of the index correspond to approval of more egalitarian relationships.

(ii)FAMILY RESOURCES

- **Household SES index**

Index created from factor loadings for ten household items: radio, television, electric stove, bicycle, motorcycle, electricity, protected drinking water, toilet, non-dirt floor, owns home. Cronbach's Alpha for the ten items is 0.56. High values of the index correspond to high economic status.

- **Agricultural assets index**

Index created from factor loadings for access to land for grazing and crops; and ownership of oxen, cows, horses/mules, donkeys, goats/sheep, chicken, and various harvested crops. Cronbach's Alpha is 0.75.

- **Business assets index**

Index created from factor loadings of indicators based on ownership of motorcycle, cart/gari and business. Cronbach's Alpha is 0.156.

- **Father (Mother) high educational aspirations**

The highest school grade that youth think their father (mother) wants them to reach is in the top quintile of respondents' reports of parents' aspirations.

(iii) COMMUNITY CONTEXT

- **Development index**

Composite index created at the community/neighborhood level from factor loadings for mean values of four indices: household socioeconomic status, housing quality, sanitation, and egalitarian relationship index. Cronbach's Alpha for the four mean indices at the community level is 0.81. High values of the index correspond to higher levels of development.

Table 3: Descriptive Statistics for Selected Variables by Respondent In-school Status and Educational Aspirations, **Adolescents Aged 13-17, Jimma Zone Ethiopia, 2005-06**.

Variable	Means			
	Not in school	**In school**	**Low aspirations**	**High aspirations**
Health status				
Height for age stunting	0.20	0.14		
Disability	0.06	0.02		
Serious illness	0.03	0.02		
Health vulnerability index			0.04	-0.15
Sociodemographic characteristics				
Female	0.50	0.49	0.51	0.44
Muslim			0.62	0.50
Gender equality index			-0.01	0.23
Family resources				
First Born			0.17	0.19
Number of siblings			4.18	3.89
Household SES index			0.01	0.24
Agricultural assets index			0.21	0.01
Business assets index			0.00	-0.04
Father high educational aspirations			0.09	0.65
Mother high educational aspirations			0.08	0.67
Community resources				
Development index	-0.22	0.31	0.25	0.51
Number of cases	187	1897	1477	420

Table 4. Parameter Estimates from Heckman Probit Model Predicting High Educational Aspirations. Adolescents Aged 13-17, Jimma Zone Ethiopia, 2005-06.

Variable	**Model 1** Full Sample ***β***		**Model2** Girls ***β***		**Model 3** Boys ***β***	
Selection Equation (in-school)						
Health Status						
Height for age (Stunting)	-0.279	*	-0.448	***	-0.041	
Disability	-0.662	***	-0.608	**	-0.205	
Serious illness	-0.122		0.068		-0.489	*
Female	-0.073					
Development index	0.057		-0.280		0.331	*
Constant	1.476		0.961		1.816	
Educational Aspirations Equation (High Aspirations)						
Health vulnerability index	-0.124	***	0.034		-0.220	***
Sociodemographic characteristics						
Female	-0.250	**				
Muslim	-0.137	**	-0.109		-0.150	
Gender equality index	0.172	***	0.298	***	0.086	
Family resources						
First born	0.076		-0.032		0.168	
Number of siblings	-0.010		0.008		-0.001	
Household SES index	0.105	***	0.107		0.118	**
Agricultural assets index	0.057		0.019		0.025	
Business assets index	-0.080	***	-0.074	**	-0.088	**
Development index	0.109		-0.096		0.429	**
Constant	-0.453		-0.568		-0.505	
Rho	-0.397		-1.000		0.868	
Log Pseudo-Likelihood	-1521		-703		-788	
Total number of cases	2080		1023		1057	
Total uncensored cases	1893		929		964	

Note: Age categorical and place (rural, town, city) were included in the selection and educational aspirations models. ***p<0.01, **p<0.05, *p<0.10

Table 5. Parameter Estimates from Heckman Probit Model Predicting High Educational Aspirations with Parental Aspirations. Adolescents Aged 13-17, Jimma Zone Ethiopia, 2005-06.

Variable	**Model 4** Full Sample ***β***		**Model 5** Girls ***β***		**Model 6** Boys ***β***	
Selection Equation (in-school)						
Health Status						
Height for age stunting	-0.241	*	-0.447		-0.099	
Disability	-0.706	***	-1.021	***	-0.395	
Serious illness	-0.140		-0.085		-0.043	
Female	-0.100					
Development index	0.077		-0.148		0.350	**
Constant	1.500		1.136		1.844	
Educational Aspirations Equation (High Aspirations)						
Health vulnerability index	-0.015		0.017		-0.075	
Sociodemographic characteristics						
Female	-0.164					
Muslim	-0.113	*	0.038		-0.205	**
Gender equality index	0.083	**	0.121		0.070	
Family resources						
First born	0.104		0.018		0.167	
Number of siblings	-0.008		-0.007		-0.006	
Household SES index	0.079	**	0.173	***	0.040	
Agricultural assets index	0.002		-0.057		0.034	
Business assets index	-0.153	***	-0.133	***	-0.175	***
Father high educ aspirations	0.502	***	0.763	***	0.358	
Mother high educ aspirations	1.199	***	1.181	***	1.199	***
Development index	0.016		-0.205		0.217	
Constant	-0.875		-1.120		-0.878	
Rho	-0.886	**	-0.946		-0.741	
Log Pseudo-Likelihood	-1239		-539		-676	
Total number of cases	2080		1023		1057	
Total uncensored cases	1893		929		964	

Note: Age categorical and place (rural, town, city) were included in the selection and educational aspirations models. ***p<0.01, **p<0.05, *p<0.10