

The role of poor health status, risks of debilitating conditions in the future, and perceived barriers to occupational attainment on the educational aspirations of Ethiopian youth

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Abstract:

Net of the effect of family and community context we investigate the role of individual health status, perceptions of health risks, and perceived barriers to occupational attainment on educational aspirations of youth. Youth may discount their occupational attainment, and hence their educational ambitions, based on perceptions of vulnerability in the future to debilitating health conditions and anticipation of discrimination in the labor force by gender and ethnicity. We use a two-step Heckman selection model to estimate the impact of these factors on adolescent educational aspirations, adjusting for in-school status. The paper uses data for 2,085 youth age 13-17 from a longitudinal survey conducted in southwestern Ethiopia. Preliminary results suggest that boys' educational aspirations are more sensitive to perceptions of health risks than girls', and girls who do not anticipate gender inequality as a barrier to their occupational attainment are just as likely as boys to have high educational aspirations.

## **Introduction**

One of the most striking developments over the last quarter century in the developing world has been the expansion of educational enrollments at all levels. In Ethiopia, between 1991 and 2006 primary school enrollment rose from 31 percent to 83 percent of the primary school age children; during the same period secondary education enrollment rose from 13 to 27 percent of secondary school age children. Even enrollment in higher education, which remains relatively low, grew substantially from 1 to 2.4 percent of youth 18-22. This phenomenal growth in educational enrollment combined with the growth and diversification of non-agricultural employment opportunities encourage youth to develop occupational aspirations very different from those of their parents. Given the central role of education in achieving access to skilled and professional non-agricultural jobs, youths' educational aspirations are a key component of their occupational aspirations and life plans.

The new socioeconomic development paradigm emphasizes human agency as an essential vehicle through which improved well-being may be attained (Sen, 1999). Because the income returns on current educational investments are not immediately realized, the belief that education is the pathway to future occupational success is critical for establishing high educational aspirations and for motivating parental and child financial and time investments in schooling. Factors that reduce individual agency and perceptions of control over one's future life course weaken the link between current educational investments and expected returns, and therefore will have a significant impact on the educational aspirations and attainment of youth. In this paper we examine the determinants of adolescent educational aspirations in Ethiopia using data from a

survey of youth ages 13-17 conducted in urban, semi-urban, and rural communities in southwestern Ethiopia. We posit that in addition to family and community level factors that influence investments and access to education, current health status and perception of vulnerability to future debilitating health conditions are important discount factors that youth take into account when forming their educational aspirations. Accordingly, we argue that adolescent educational aspirations will be lower among youth who see themselves at high risk of experiencing a debilitating health condition in the future. Given the pervasiveness of health related problems in sub-Saharan African societies our study suggests that the human development costs of poor health include not only the direct effects of lost productivity, but also lower aspirations and investments in education among healthy kids who see themselves at high risk of poor health in the future.

Ethiopia offers a useful case for examining the impact of health status and perceptions of future health risks on educational aspirations. It is the third largest nation in Africa with 77.1 million inhabitants and it one of the poorest nations in the world. Eighty-five percent of the population is rural, and more than three-quarters of Ethiopians live on less than two dollars a day. One-third of the population ages 10-24 years are illiterate and 85 percent live in households without adequate sanitation. In 2007 Ethiopia was ranked 169th out of 177 countries on the Human Development Index. In spite of the severe levels of economic deprivation, the public educational sector has grown at a rapid rate. The expansion of schooling at all levels and the decentralization and expansion of public universities has been a high development priority of the national government. Enrollments in regional public universities outside of the capital city, Addis Ababa, have grown from less than 10,000 students in the early 1980s to over 100,000 today. This

expansion of opportunities at the secondary and university level has put school attainment beyond the primary level within realistic reach of many youth and has fostered the development of high educational aspirations.

### **Theory and Hypotheses**

Research on educational aspirations and attainment in developed countries, and especially in the United States has been motivated largely by concerns about the comparatively low levels of school performance and educational aspirations of youth from ethnic minorities and socio-economically disadvantaged groups. Early studies on educational aspirations and achievement in the United States viewed educational achievement as it related to status attainment and the social mobility (Sewell and Shah, 1967; Sewell, Haller and Portes, 1969; Hauser and Sewell, 1980). More recently, research has examined the role of family financial and social resources, the neighborhood context and access to quality schools, and social barriers to the translation of individual educational achievement into occupational gains as causal factors leading to poor educational outcomes.

### ***Family Resources***

Family resources encompass the financial and social resources that are available to children through membership in a household, and that contribute directly and indirectly to academic performance and high educational aspirations. Family income and wealth have direct effects on student educational outcomes by providing parents with a greater choice of schools through enabling residential location in areas with good schools or allowing the use of private schools. Higher income households also have more resources to purchase books and other educational materials. In low income countries

school fees, books, uniforms, and the cost of public transportation to the nearest school can be barriers to school attendance.

Among poor households in the developing world the economic contributions of children are often a vital component of household production and survival. Poorer households are more likely to rely on the labor of children for farm work and for family businesses, or depend on the earnings of children from employment outside of the home. Children from rural households with limited resources often have poor school attendance because they are an important source of labor for household production, especially in labor-intensive subsistence farming (Cockburn, 2001; Burke and Beegle, 2004; Cockburn and Dostie, 2007).

Children in low-income households also tend to have less access to the social resources that contribute to academic success. Research has shown that household social capital plays an important role in determining adolescents' educational aspirations and achievement (Majoribanks, 1997; Israel, Beaulieu, and Hartless, 2001). Youth from low income households tend to have lower academic performance and educational aspirations and a higher risk of school drop-out in part because they are less likely to have highly educated adults in the household to serve as positive role models, and to help with school work. Lower income households also tend to be socially connected with persons of similar backgrounds and therefore lack the social contacts with people (social capital) who can assist them in navigating the educational system.

### ***Community Resources***

Community resources are the factors that are attached to the places where youth live that determine the opportunities to receive a quality education. In high income

countries, where basic access to primary and secondary education is universal, there are substantial differences in the quality of education by neighborhood and by higher levels of geographic aggregation. Studies show that neighborhood disadvantage is a salient predictor of educational aspirations (South et al, 2003; Books-Gunn et al., 1993; Garner and Raudenbush, 1991; Crane, 1991). Disadvantaged neighborhoods are likely to have poor quality schools, which is an impediment to academic achievement. Poor quality schools discourage learning, they provide poor academic preparation for advancement to the next educational level, and therefore discourage the formation of high educational aspirations.

In low-income countries basic access to schooling is closely linked to place of residence. More remote rural communities may not have schools, and a poorly developed transportation infrastructure may make it difficult to get to schools in other areas. The quality of schooling also often varies substantially by the level of community development. Poor communities lack the financial resources to supplement limited government funding for education and the political capital to make demands on regional and national government authorities. Traditional communities may also place lower emphasis on modern, secular education, and favor traditional and religious instruction. On the other hand, more economically developed areas offer in addition to better schools, better employment opportunities and therefore greater incentives to youth to stay in school in expectation of a better job.

### ***Discount Factors***

We treat as discount factors those aspects of youth's individual circumstances that weaken the link between educational achievement and subsequent occupational

attainment. Factors that lower the expected future returns on current educational investments foster a sense of helplessness and discourage youth from developing high educational aspirations. Discount factors play a prominent role in the literature on poor educational outcomes among inner-city youth in high income countries (South et al, 2003; Books-Gunn et al., 1993; Garner and Raudenbush, 1991; Crane, 1991). These factors include ethnic or racial discrimination, and exposure to criminal and gang violence.

Perceptions of, and direct experiences with, racial or ethnic discrimination have been associated with lower school performance and educational aspirations in the United States and in other countries. While part of the association is due to the lower resources associated with being a member of a discriminated group, there is also the more direct effect of lower anticipated earnings due to the expectation of blocked opportunities. Studies have shown that in addition to social stresses due to socioeconomic disadvantage, anticipation of structural barriers and perceived social disadvantage also reduce educational aspirations and achievement of minority youth in the United States (Sirin et. al. 2004; Hill et. al., 2003, McWhirter, 1997).

Ethnic and religious based structural and political divisions are a prominent feature of many societies. The economic and political dominance of one or more ethnic groups and the subordinated status of others manifest itself in systems of patronage that regulate access to economic rewards, including employment in the private and public sectors. In complex multi-lingual societies, access to higher levels of education and skilled employment may be blocked for members of linguistic minority groups that have a limited command of the dominant language. Youth who are members of a discriminated

group or who do not have the linguistic skills to succeed in urban labor markets may have lower educational aspirations in response to the perception of blocked opportunities.

Gender discrimination in terms of access to education as well as the range of roles available in adulthood is particularly salient discount factor for girls. Girls reduce their ambitions for high levels of education in anticipation that gender-bias in the labor force will reduce their ability to realize returns on schooling (Marini, 1978, Shu and Marini, 1998). In developing countries where traditional gender values relegate women to a subordinate position, discrimination against girls either directly bars them from higher levels of education, or discourages them from imagining long-term returns on current investments in education. In sub-Saharan African societies higher levels of education among boys compared to girls is widespread and well documented and is partly attributed to preferential allocation of household resources to boys (Colclough, Rose and Tembon, 2000; Rose and Al-Samarrai, 2001). The gender gap in educational enrollment tends to be greatest in the poorest countries, and at the secondary and tertiary levels. Gender differences in educational attainment also tend to be higher among Muslims than among other religious groups.

Research on school outcomes in inner-city neighborhoods in the United States identify exposure to criminal and gang violence as being associated with greater levels of hopelessness and vulnerability, and weaker control over one's life, all of which are also associated with poor academic performance and less future oriented goals. Youth who live in neighborhoods where violence is common and who have witnessed violence or know of age peers who have been victims of violence are more likely to see themselves as being at risk. The perception of risk diminishes a sense of control over one's future



and discourages long planning horizons, and in particular the idea that doing well in school will enhance one's future life chances. The disconnect between educational attainment and occupational attainment created by the fear of being a victim of violence discourages youth from developing high educational aspirations and places youth at a higher risk of poor school performance, poor attendance, and dropping out of school. Similarly, youth who perceive themselves to be at a high risk of sexual and physical abuse have been noted to manifest low life aspirations (Macmillan, 2001). Adolescents who are victims of sexual and violence may experience diminished educational self-efficacy, that is the belief in their ability to attain goals, which in turn leads to low educational performance and attainment (Macmillan and Hagan, 2004).

While war and civil conflict has been a much more serious threat to human welfare than criminal and gang violence in many developing societies, a more pernicious and wide-reaching risk for many youth is exposure to infectious disease and debilitating illness. In sub-Saharan Africa, malaria has made a come back in many countries and affects the lives of millions. At the global scale the sub-Saharan region is the worst affected by the HIV/AIDS epidemic. The adverse effects at an aggregate level of malaria and other infectious diseases on lost productivity and lower investment in physical and human capital have been well documented (Gallup and Sachs, 2001; Chima et al., 2003). However, the effects of current health status and more importantly the expectation of future illness on educational aspirations have not been examined. We expect that by increasing the level of uncertainty of receiving future returns on current educational investments, poor current health status or the perception of a future high risk of poor health will discourage high educational aspirations.

## *Hypotheses*

From our review of the effects of family and community resources and discount factors on educational aspirations we develop the following hypotheses:

Family Resources	Direction of effect on educational aspirations
Household wealth	+
Level of education of household head	+
Number of adults	+
First born	+
Community Resources	
Proportion of students taught mainly in English	+
Community development index	+
Discount Factors	
Health vulnerability index	-
Muslim	-
Cannot read or write Amharic	-
Female	-
Traditional gender values	-

## **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 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. 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 ages 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 adolescents every twelve months for a period of at least five years and re-interview of households every two 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,

household participation in exchange networks, and measures of economic assets and well-being. The adolescent questionnaires collected information on schooling, employment, aspirations for the future, health and health care, nutrition, and marital and fertility plans.

### ***Variable Definitions and Measures***

The outcome variable is a dichotomous variable that equals one for youth who were in the top quartile of aspired years of schooling, which corresponds to tertiary education. Such a categorization is especially important given that completing tertiary schooling involves high levels of family and adolescent financial and time investments. Our independent variables include measures of family and community resources, and measure of cultural and health discount factors.

#### *Family resources*

For family resources we include a household wealth index which is computed from household ownership a variety of durable goods using factor analysis. The items included in the construction of the index are listed in Table 2. The index is comparable to a wealth index that was constructed using the Demographic and Health Surveys and thoroughly tested for internal consistency. In addition to household SES we also control for household ownership of agricultural and business assets, which we use to proxy the household demand for adolescent labor, once SES is taken into account. Agricultural assets, such as access to farm land and ownership of live stock increase household demand for labor and the capacity of households to absorb adolescent labor once youth leave school. Both factors may reduce the educational aspirations of youth because of the competing demands of farm work and schooling on adolescents' time, and because of the

opportunity for adolescents to remain economically active at home rather than having to seek off-farm employment. We expect household ownership of a business to have a similar negative effect on adolescent educational aspirations, both because of the demand on adolescents' time and the ability of youth to find future employment in the family business.

In addition to measures of the household labor demand, we also include measures of household labor supply. The number of adults in the household ages 12 to 59, and the number of siblings the adolescent has in the household capture the availability of other household members to perform domestic chores and participate in farm and off-farm employment.

#### *Community resources*

The community development context influences adolescent educational aspirations by captures access to educational and health facilities, and that may enhance or diminish youths' educational ambitions. In rural areas, the community development context also signals availability of employment opportunities outside the informal subsistence economy. Such opportunities stimulate youths desire to invest in formal education. We therefore include a community development index which is a composite index created at the community 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. In addition to community development we control for location in rural, semi-urban, or urban region.

Given that we are interested on the impact of community resources on youth's educational plans we also control for quality of educational facilities in the community. We use proportion of schools in the community that use English as the medium of instruction as an indicator of school quality in the community.

#### *Discount factors*

We include five factors that can have a negative impact on educational aspirations as discount factors. These discount factors capture different dimensions of youths' individual circumstances that weaken the link between educational achievement and subsequent occupational attainment. The first set of discount factors measure health vulnerability. We construct an index of health vulnerability based on a factor analysis of whether youth currently have or expect to have in the future: night blindness, HIV/AIDS, tuberculosis, diabetes, malaria, and a serious injury. High values of the health vulnerability index correspond to currently have the condition or view the likely of eventually having the illness as very high or high. We also include three other indicators of current health status: stunting, disability status, and currently has a serious health condition. We expect that current health status influences current school enrollment status, or selection into school. In the developing world, stunting has been shown to influence school enrollment and eventual educational outcomes (Alderman et al., 2006). In our analysis an adolescent is stunted if she/has has a height (or length)-for-age which is more than two standard deviations below the median of the World Health Organization (WHO) international reference. Youth are identified as having a disability if they have one or more of the following conditions: a 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. We create a current health status index based on the total number of the following conditions that a youth has: night blindness, HIV/AIDS, tuberculosis, diabetes, or malaria or a severe injury from an accident. Seriously ill youth are less likely to be in school, and therefore were not asked about future educational aspirations by the survey

We also include a measure of conformity to traditional gender values. We expect that girls with more traditional gender values will value educational investments less than girls with more egalitarian gender values, and therefore will have lower educational aspirations. Girls with more traditional gender roles are less likely envision themselves in non-traditional roles and in particular, in economic roles traditionally occupied by men. They are therefore less likely to view higher levels of education as making a significant difference in their lives or being worth the time and effort. Both boys and girls with less traditional gender values are also more likely to adopt new values and models of lifecourse trajectories than youth holding onto more traditional gender values. For example, aspiring for long term education training entails delayed marriage, parenthood, and a postponed of economic activity. Using factor analysis we create an index of traditional gender values based on agreement with six statements (1=Agree, 0=Disagree, 0.5=Don't know): (1) A woman should always listen to her husband, (2) Normally a man should not have to do housework, (3) Marriage by abduction is acceptable, (4) The husband should have the final say in all major family matters, (5) There is nothing a woman can do if her husband wants to have a mistress, and (5) Female circumcision is a practice that should continue.

We use indicators of gender, religion, and literacy in the Amharic language to capture background characteristics that are associated with discrimination, more traditional values, and blocked urban employment opportunities. We expect girls to have lower educational opportunities than boys, net of individual gender values; and Muslim youth to have lower aspirations for formal schooling. We also expect that youth who cannot read and write Amharic, the traditional language of government and commerce in Ethiopia and the former national language, to also have lower educational aspirations.

### **Analytical Technique**

This analysis is based on adolescents who are enrolled in school and anticipate continuing to do so. To correct for the selectivity of students currently enrolled in school, we use a two-step Heckman selection model to assess appropriately 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 these 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,  $x_j$  is a vector of the predictor variables of educational aspirations,  $y_j^*$ , which in our model are the family resources, community development and quality of educational institutions, and the discount factors. The outcome variable, which is binary categorized by high or low educational aspirations, can be expressed by a Probit equation

$$y_j^{\text{probit}} = (y_j^* > 0)$$

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

$$y_j^{\text{select}} = (z_j\gamma + u_{2j} > 0),$$

the selection equation, where

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

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**

### ***Descriptive statistics***

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 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. 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.

#### *School enrollment trends*

As figure 1 and 2 shows school opportunities have been growing overtime. Proportion of both males and females reporting having some years of education increases with the younger cohorts, and notably the difference between males and females in these proportions shrink overtime which means that education opportunities at least at the primary level (less than 8 years) has been expanding for both genders.

#### *Health vulnerability*

A higher proportion of girls report having an illness compared to boys (figure 3 and 4). Also girls consider themselves at a higher risk of having these illnesses in the future compared to boys.

#### ***Selection into School Enrollment***

School enrollment varies between boys and girls (Table 4). Girls' school enrollment is more responsive to childhood nutritional status (stunting) than boys. Girls with nutritional deficits during the first three years of life are less likely to be enrolled in school. The school enrollment of girls is more responsive to poor health than that of boys--girls with disabilities are much less likely to be enrolled in school compared to

boys. Boys living in more developed communities with greater access to schools and more economic opportunities are more likely to be enrolled in school.

### ***Determinants of High Educational Aspirations***

#### *Family resources*

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.

Unlike prior research on other populations, however, neither the number of siblings nor adolescents' status as the first born child affect their educational aspirations. Similarly, household dependency structure and labor supply as captured by number of adults does not affect educational aspirations of these youth. For boys however it matters whether their families own business which signals to the sensitivity of boys' educational plans to employment opportunities. Boys from families which own businesses see that as an alternative potential source of employment.

#### *Community resources*

The level of community development is an important predictive factor of boys' educational ambitions. Boys from more developed communities have higher educational aspirations whereas for girls community development context is less important. Again, boys appear to be more cognizant of employment opportunities that are available their communities in making their educational plans than girls.

#### *Discount factors*

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 educations 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 figure 5 shows the discounting effect of health vulnerability is also mediated by views on gender values. At the same level of perceived health risk, girls with low scores on the traditional gender values index, i.e, those who believe they have same opportunities as boys, they have educational aspirations comparable to those of boys.

Whether youth reads and writes Amharic appears to be an important discount factor of their educational aspirations. These youth regard their inability to read and write Amharic, which is the language of instruction in higher levels of education, as a disadvantage that would hinder their progression in higher educational levels. The discounting effect is stronger for girls than boys.

## **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 fearful 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 regarding the discounting effect of factors that youth may anticipate will weaken the link between their investment in education and the eventual occupational attainment (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.

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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**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
<u>Urban</u>				
6 neighborhoods	120,000	1,404	353	393
<u>Semi-urban</u>				
3 towns	3,000-5,000	1,061	303	287
<u>Rural</u>				
9 peasant associations	2,000-4,300	1,226	404	345
Total		3,691	1,060	1,025

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

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**OUTCOME VARIABLE**

**High educational aspirations:** Top quintile of educational aspirations (highest grade youth plans to complete) distribution among youth still in school.

**PREDICTOR VARIABLES:**

**(I) FAMILY RESOURCES**

- **Household wealth**

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 0.83.

- **Business ownership**

A binary variable recorded as 1 if the household own a business and zero 0 otherwise.

**(II) COMMUNITY RESOURCES**

- **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.

**(II) DISCOUNT FACTORS**

- **Health vulnerability**

Index created from factor loadings based on questions on having or expectations of having in the future: night blindness, HIV/AIDS, tuberculosis, diabetes, and malaria. Cronbach's Alpha for the five items is 0.72. High values of the index correspond to already having or perceived high risk of having in the future serious illness or health conditions.

- **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.

- **Traditional gender values**

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 adherence to traditional gender values.

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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	Not in school	In school	Means Low aspirations	High aspirations
<b>Discount factors</b>				
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**
Female	0.50	0.49	0.51**	0.44**
Muslim			0.62*	0.50* <sup>1</sup>
Cannot read and write Amharic			0.36	0.38
Traditional gender values			0.01	-0.03
<b>Family resources</b>				
First Born			0.17	0.19
Number of siblings			4.18**	3.89**
Number of adults			4.65*	4.52*
Household SES index			0.01	0.24
Agricultural assets index			0.21	0.01
Business assets index			0.00	-0.04
<b>Community resources</b>				
Development index	-0.22	0.31	0.25	0.51
Number of cases	188	1897	1477	420

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$  for test of difference of group means equal to zero.

Figure 1:

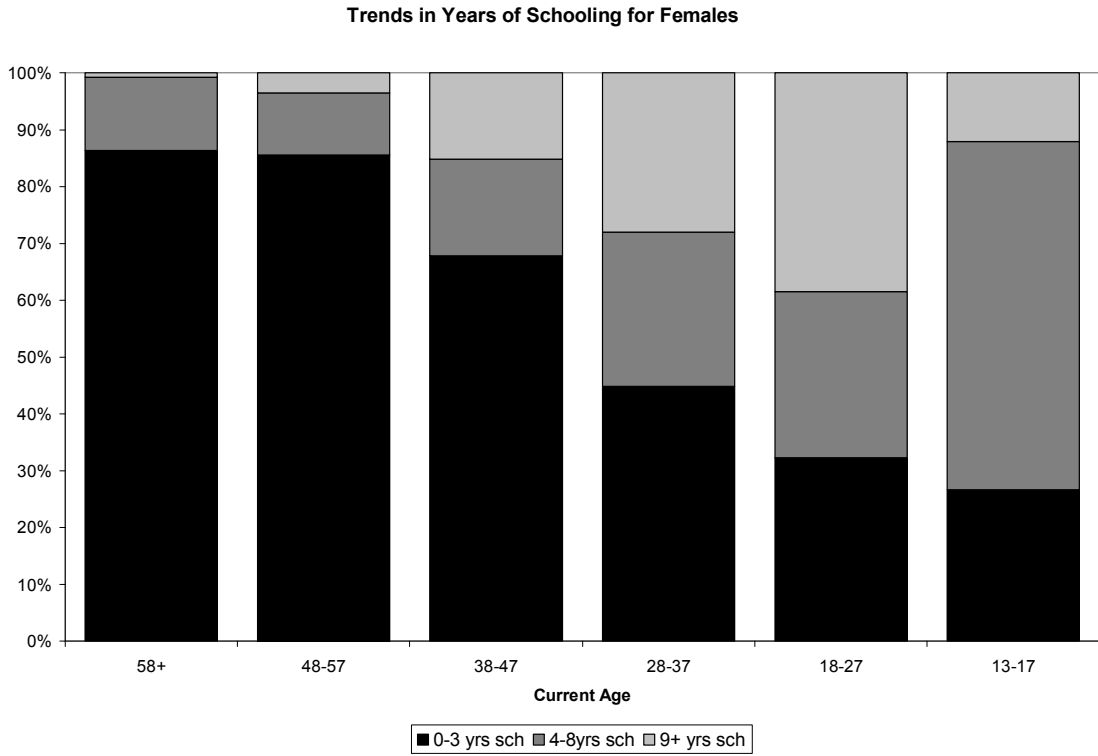


Figure 2:

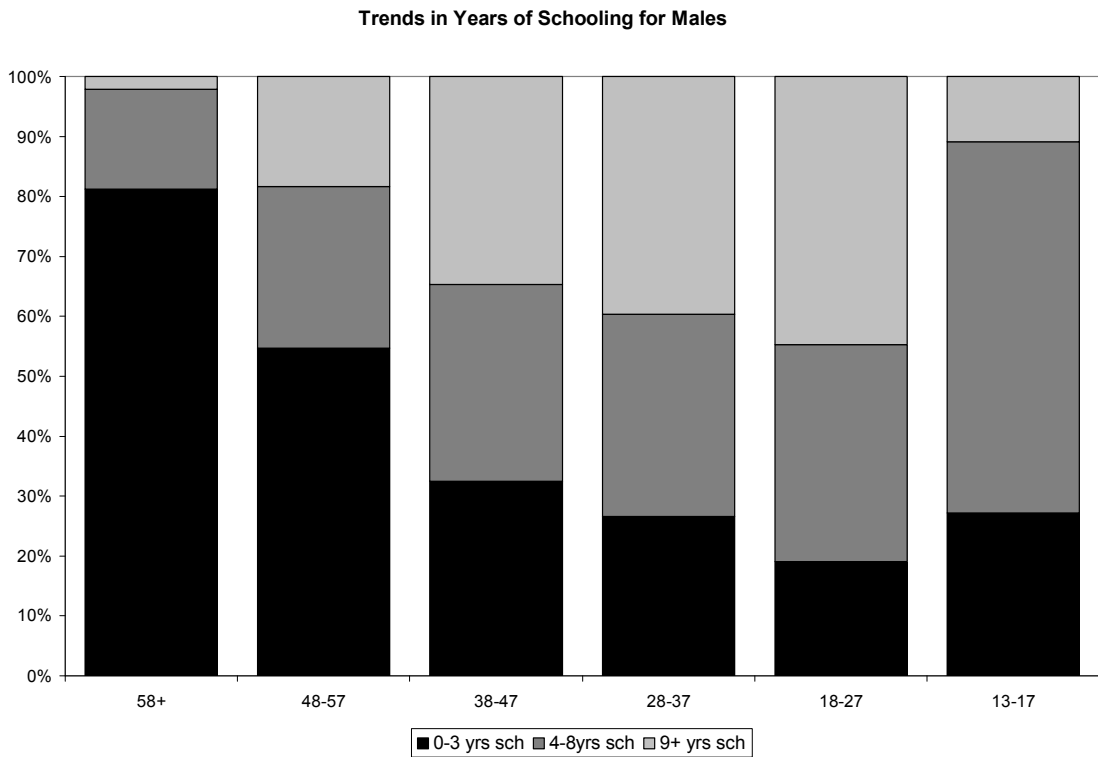


Figure 3:

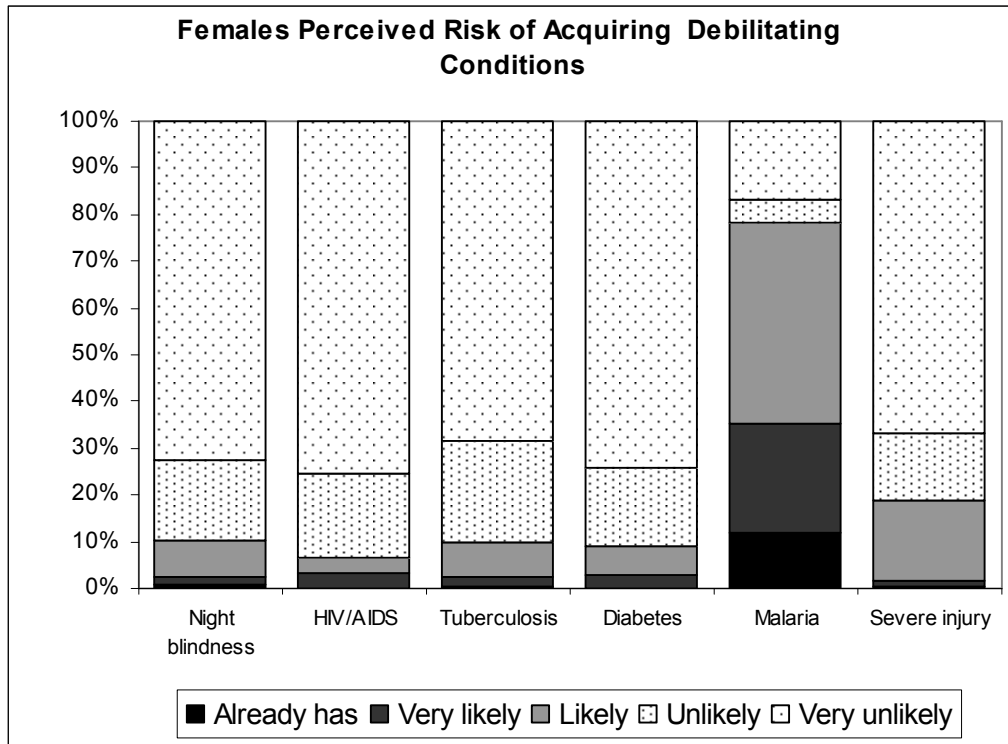
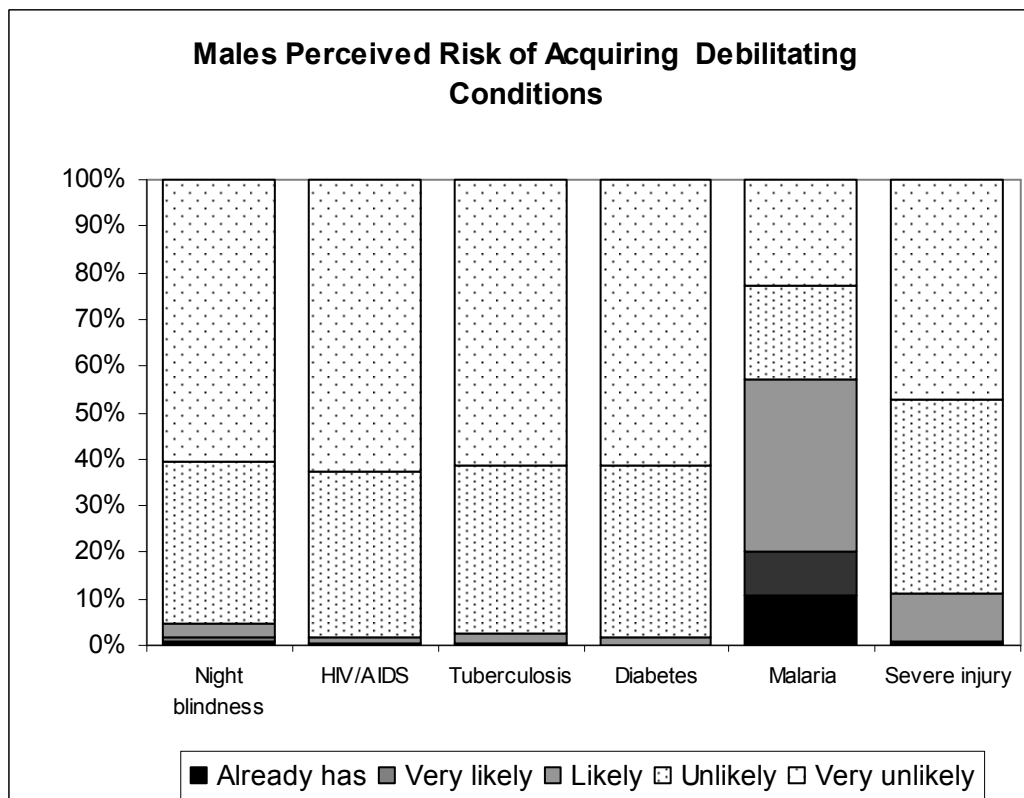


Figure 4:



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

Variable	Model 1		Model 2		Model 3	
	<i>All</i>		<i>Girls</i>		<i>Boys</i>	
	Coeff		Coeff		Coeff.	
<b>Step 1: (High educational aspirations)</b>						
<b>Family Resources</b>						
Household wealth	0.0903	**	0.0969		0.1041	*
Number of siblings	-0.0169		-0.0072		-0.0187	
Number of adults	0.0119		-0.0277		0.0429	
First born	0.0912		-0.0497		0.2008	
Agricultural assets index	0.0555		0.0803		0.0202	
Business assets index	-0.3822	**	-0.3269		-0.4925	***
<b>Community Resources</b>						
Community development index	0.1220		-0.2375		0.4048	**
<b>Discount Factors</b>						
Health vulnerability index	-0.1165	**	-0.0459		-0.1521	***
Muslim	-0.1089		-0.0886		-0.1253	
Cannot read and write Amharic	-0.1937	**	-0.2971	**	-0.1015	
Female	-0.2545	***				
Traditional gender values	-0.1697	***	-0.3687	***	-0.0719	
Constant	-0.4943		-0.8768		-0.5696	
<b>Step 1: Selection Equation (in-school)</b>						
Female	-0.0371					
Height for age (Stunting)	-0.1634		-0.4907	***	0.1150	
Disability	-0.7305	***	-1.2125	***	-0.3048	
Serious illness	0.0113		-0.0004		0.0246	
Community development index	0.0604		-0.2480		0.3339	**
Constant	1.4459		1.0816		1.7844	
Rho	0.3867		0.9841	***	0.7528	
Log pseudo-likelihood	-1525		-700		-796	
Total number of cases	2084		1024		1060	
Total uncensored cases	188		94		94	

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

Figure 5:

