Educational Choices and Subjective Expectations of Returns to Schooling: Evidence on Intra-household Decisions and Gender Differences

Orazio P. Attanasio[*] and Katja M. Kaufmann[†]

PRELIMINARY

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Abstract

The goal of this paper is to improve our understanding of human capital investment decisions. We analyze two aspects of this decision process: firstly we shed some light on the decision-making process within the household by addressing the question whose expectations matter in schooling decisions, the ones of the parents or the ones of the youths, and whether this depends on the gender of the youth. And secondly we investigate the role of potential determinants of schooling, such as expected monetary returns, perceptions of earnings and unemployment risk and returns in the marriage market, allowing for differences between male and female youths. To address these questions we use a data set on Mexican junior and senior high school graduates that elicits their own and their parents' beliefs about future earnings for different scenarios of highest schooling degree, that contains proxies for returns in the marriage market and provides information about the actual schooling choice and an extensive set of controls.

We find that for boys, both parents' and youths' expectations matter for the high school choice, while for the college attendance choice only the ones of the youths appear relevant. For girls on the other hand, only parents' expectations seem important for both high school and college attendance decision. While we do find evidence of important differences in information sets between parents and youths and boys and girls, girls do not appear to be less informed about potential returns to schooling than boys. In our analysis, we take into account one determinant that has often been neglected, that is perceptions of earnings and employment risk for different schooling scenarios. We find that their role depends on the gender of the child as well as on whether the decision is about attending high school or college. While for boys risk perceptions seem be more important in high school decisions and expected returns appear more relevant in college attendance decisions, for girls risk perceptions appear to be the key determinant of both schooling decisions. In addition we provide suggestive evidence that for girls returns in the marriage market might also be playing a role.

Our results have important policy implications for the design of programs aiming at increasing schooling, for example in terms of who should receive the conditional cash or fellowship. For the effective design of such programs, it is indispensable to understand, whether there are differences in the determinants of schooling choices and differences in the intra-household decision process depending on the gender of the child.

[*]University College London, Institute for Fiscal Studies, NBER, CEPR and BREAD. o.attanasio@ucl.ac.uk

[†]Department of Economics and IGIER, Università Bocconi, Address: Via Roentgen 1, 20136 Milano, Italy, e-mail: katja.kaufmann@unibocconi.it.

1   Introduction

The goal of this paper is to improve our understanding of human capital investment decisions. We analyze two aspects of this decision process: firstly we shed some light on the decision-making process within the household, in particular we address the question whether youths start playing a role in this decision at a certain age, and whether this depends on the gender of the youth. We use a novel approach based on analyzing whose expectations matter in schooling decisions, the ones of the parents or the ones of the youths. In connection to this question, we are also interested in how informed are male and female youths and their parents about potential earnings for different schooling levels. Secondly, we investigate, if the role of potential determinants of schooling differs between male and female youths. For example, do expected monetary returns matter more for males than females? Do females care more about perceived earnings and employment risks and returns to schooling in the marriage market? To address these questions we use a data set on Mexican junior and senior high school graduates that elicits their own and their parents' beliefs about future earnings for different scenarios of highest schooling degree, that contains proxies for returns in the marriage market and provides information about the actual schooling choice and an extensive set of controls.

Understanding whether parents' or youths' expectations matter is important, as not taking into account that children might be playing a role in household decisions –when they actually do– could lead to deficient explanations of investment into higher education.[1] For example, one might conclude that (parents') expectations about returns do not matter, while it is the ones of the youths that matter. Especially in the case of older children, it is quite likely that parents are not the only ones who have a say in education investment decisions. Older children are likely to have better earning opportunities and are more likely to be autonomous from parents. Whether and at which age children should be considered as economic agents in household decisions is an empirical issue which we try to settle in what follows.

This issue may also have important implications for the design of public policy: the program *Oportunidades,* for instance, is considering the possibility to pay part of their schooling grants directly to the youths, which might improve the effectiveness of the intervention if youths play an important role in the decision about school enrollment and attendance and parents only have imperfect control over the actions of the child. Evidence on how informed parents and youths are about potential earnings for different schooling levels is key for understanding, whether information campaigns about possible careers and potential earnings could be an efficient mean to raise schooling, while understanding who has a role in the decision process is important for targeting the information campaign to the youth and/or the parents. Furthermore, for the effective design of programs intended to increase schooling, it is indispensable to understand, whether there are differences in the determinants of schooling choices for boys and girls, and differences in the intrahousehold decision process depending on the gender of the child.

The conventional literature on educational decisions uses data on earnings realizations to infer

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[1]This is true, if expectations of parents and children differ systematically, which is a question we can address with our data and which we find to be the case.

people's expectations and relies on strong assumptions about people's information sets and about how people form expectations. It is usually assumed that people form expectations in the same way, while researchers themselves have not agreed upon how people form expectations, for example in terms of how they deal with the fact that people whose earnings they observe have self-selected into schooling.

Data on people's subjective expectations of earnings allow to relax assumptions on information sets and expectation formation. With data on parents' and youths' expectations we can allow for differences in information sets and ways of forming expectations between parents and (male and female) youths and these data thus provide the opportunity to improve our understanding of the intra-household decision process.

This paper shows that there are indeed important differences in parents' and youths' expectations about earnings of one and the same person, the youth herself. We thus provide evidence on important differences in information sets and ways of forming expectations between parents and youths. This underlines the crucial role of direct data on people's expectations for understanding whose expectations matter in schooling choices. Secondly, we provide evidence on informational differences between boys and girls about future earnings and employment probabilities. In a society such as Mexico, schooling attainment and labor force participation have changed dramatically in the past decades. This is particularly true for women: young generations of women now have similar schooling levels as men and are much more strongly tied to the labor force than their mothers or cohorts of women who are just a few years older. If people form expectations about potential earnings for different schooling levels and employment probabilities by observing people around them, it might be much harder for women to predict future earnings and labor force participation than for men. While this is very hard to accommodate with conventional approaches, using data on people's subjective expectations allow to take this into account. Thereby, direct information on people's expectations enable us to analyze, whether there are differences in the role of potential determinants of schooling, such as expected monetary returns and perceived earnings and unemployment risk, between male and female youths in Mexico allowing for differences in information sets.

We analyze the importance of expected monetary returns to schooling and of returns in the marriage market for boys versus girls and the importance of parents' versus youths' expectations in schooling decisions. In what follows, we model the decision of youths who have just finished junior high school to enroll (or not) in senior high school and that of youths who have completed senior high school to enroll (or not) in college. We use our subjective expectations data to construct measures of expected earnings for different schooling scenarios, perceived earnings risk and perceived unemployment risk, in order to study the extent to which these expectations affect education choices. In addition we provide some evidence on the role of returns in the marriage market using data on the ratio of unmarried men to women with a certain level of schooling in the locality of residence and on the size of the locality of residence to capture the "density" of potential partners (compare Boulier and Rosenzweig (1984)). If the likelihood of finding a suitable partner (i.e. a partner with similar or more education) in the locality of residence is low, leaving the locality to go

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to college or high school has the additional benefit of increasing the chances of finding a suitable partner. The additional indirect returns to schooling, which come in the form of a higher-earning (or in general in the form of a higher-quality) spouse, can be quite considerable.[2]

We find that –in terms of the decision to attend senior high school– parents' as well as youths' expectations matter when it comes to boys. Perceptions of future earnings and employment risk appear as important as expected returns to high school. For girls on the other hand only mothers' perceptions of earnings risk appear important, while the girls' own expectations are not significant. In contrast to boys, returns in the marriage market seem important for girls' decisions to attend high school.

For the college attendance decision, only boys' own expected returns to college appear important in this choice. For girls, again only mothers' expectations matter, in particular their perception of increased employment chances of their daughter with a college degree.[3]

The results of this paper show that how families decide about the education of their children and what are the key determinants of this choice importantly depend on the gender of the child. Furthermore, we provide evidence that not only expected (monetary) returns matter, but also risk perceptions and marriage market considerations. We show how data on subjective expectations help us to shed light on the intra-household decision-making process and on the relevance of people's ex-ante beliefs about returns and risk perceptions in the decision to invest into human capital.

Our paper is related to the following areas in the literature, the literature using data on people's subjective expectations to understand choices under uncertainty, the literature on gender differences in schooling choices, the intra-household allocation literature and the literature on schooling and returns in the marriage market.

Firstly, our paper is part of a recent literature studying data on individual's "subjective" expectations, whose use has been eloquently advocated by Manski (2004). There is a growing literature using subjective expectations in developing countries (for recent surveys, see Attanasio (2009) and Delavande, Giné, and McKenzie (2009)). The seminal paper that has looked at expectations of the return to education is Dominitz and Manski (1996). They illustrate for a small sample of Wisconsin high school and college students that people are willing and able to answer subjective expectations questions in a meaningful way.

Three recent papers investigating the link between subjective expectations and schooling choices are Jensen (2008), Kaufmann (2009) and Nguyen (2008). Jensen (2008) investigates how perceived returns to education affect schooling investments using data from the Dominican Republic. He finds that the students in his sample of 8th graders significantly underestimate returns to schooling. Informing a random subset of the youths about higher measured returns leads to a significant

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[2]For example, Goldin (1992) finds that for American women, a large fraction of the return to college came in the form of a higher earning spouse. For the cohort of American women that graduated between 1945 and 1960, roughly half the gain to household income was through this channel.

[3]It is harder to assess the importance of marriage market considerations in the context of college choice for the following reason: Given that senior high school students often have to leave their locality of residence (or even their municipality) for attending senior high school, it is less clear for the older cohort of senior high school graduates what is the right area of reference for marriage market proxies. We use the municipality of residence for this cohort keeping in mind that this is most likely a worse predictor of people's perception of availability of mates than when we use the smaller unit of locality as the reference area for the cohort of junior high school graduates.

increase in perceived returns and in attained years of schooling among these students. Nguyen (2008) finds that informing a random subset of a sample of students in Madagascar about high returns to schooling increases their attendance rates and their test scores. Neither of these two papers has data on both parents' and youths' expectations nor on people's perceptions of earnings and unemployment risk, in contrast to this paper and a paper by Kaufmann (2009), who uses the same Mexican data set.[4] Kaufmann (2009) uses subjective expectations to analyze the importance of credit constraints in college attendance decisions. She finds that poor individuals require significantly higher returns to be induced to attend college and shows how data on expected returns and attendance choices allow to get direct estimates of the cost distributions that people face. She tests implications of a school choice model in the presence of credit constraints and evaluates potential welfare consequences of introducing a governmental student loan or fellowship program (using a Local Instrumental Variables approach by Heckman and Vytlacil (2005)). Her results suggest that credit constraints play an important role in college attendance decisions, for example in that "marginal" expected returns are higher than average returns of people who already attend college, and that student loan programs could be welfare improving.

In terms of the literature on gender differences in educational attainment, for example, Goldin, Katz, and Kuziemko (2006) analyze reasons for the reversal of the college gender gap in the US, while Duryea, Galiani, Nopo, and Piras (2007) present descriptive evidence on the evolution of the gender gap in average years of education in Latin America and the Caribbean and Parker and Pederzini (2000) on Mexico. The development literature has investigated in some depth differences in families' intra-household allocation decisions in boys and girls (see, for example, Duflo (2003), Thomas (1990) and Rosenzweig and Schultz (1982) on gender differences in health investments and a recent paper by Li, Rosenzweig, and Zhang (2008) on reasons for intergenerational transfers). Rosenzweig and Schultz (1982) explore the hypothesis that sex differences in child survival rates are related to relative returns of survival, with households selectively allocating resources to children in response to variation in sex differences in their expected earnings opportunities. We aim to contribute to this literature by using data on parents' and youths' subjective expectations about returns, which allows us to take into account unobserved heterogeneity in skills and also heterogeneity in people's information sets about skills and skill prices. The only paper we know of that uses data on subjective expectations to understand gender differences is by Zafar (2009), who investigates the role of preferences versus expectations in the college major choice of undergraduate students at Northwestern.

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[4]In fact most papers in the literature neglect the importance of risk as a determinant of educational choice and assume no uncertainty or certainty equivalence (see, e.g., Cameron and Taber (2004) and Carneiro, Heckman, and Vytlacil (2005)). Two papers that take into account risk as a determinant of education choices are Padula and Pistaferri (2001) and Belzil and Hansen (2002). Only the former employs subjective expectations but aggregates perceived employment risk for education groups to analyze whether the implicit return to education is underestimated when not taking into account effects of different schooling levels on later earnings and employment risk. Given the nature of our data, we are able to take into account the perceived risks associated to different investment choices directly and determine whether they affect investment choices. It should be stressed that our data on people's subjective distribution of future earnings allow us to derive measures of risk perceptions that do not confound "true" risk with unobserved heterogeneity (as would be the case using earnings realizations) and to take into account that ex-ante perceptions matter.

Dauphin, Lahga, Fortin, and Lacroix (2008) is one of the few papers investigating, whether children of a certain age are decision-makers in the intra-household allocation process. They test the restrictions of a theoretical model and present evidence for the UK that children between 16 and 21 should be considered full members influencing the household decision-making process, which is consistent with the results of this paper. Berry (2009) analyzes whether the identity of the recipient of cash incentives –either the parent or the child– can influence the effectiveness of conditional cash transfer programs by conducting a field experiment in India giving incentives to achieve a specific reading goal.

In terms of investment in schooling and the marriage market, there have been some recent theoretical advances, for example Chiappori, Iyigun, and Weiss (2009), but to our knowledge there is little empirical evidence on that topic. Notable exceptions are Boulier and Rosenzweig (1984), but the identification relies on the assumption that parental characteristics are orthogonal to children's endowment. A more recent paper by Boulier and Rosenzweig (1984) addresses this concern using data on identical and nonidentical twins to identify the responsiveness of schooling to individual-specific endowments in the family and in the marriage market. The focus of this paper is different to ours in that it addresses the two questions of whether parents invest to reinforce or compensate for individual differences in endowments and to understand the question of who marries whom. We instead focus on the schooling decision to understand in how far (parents' and youths') expectations about returns to schooling as well as returns in the marriage market affect the intra-household decision to invest into human capital.

The rest of the paper is organized as follows: Section 2 presents a basic model of education choices. Section 3 describes in detail the data, in particular the module on subjective expectations. Section 4 presents summary statistics on attendance rates and a variety of individual and background variables as well as on the expectation data. We provide evidence that people are able to give meaningful answers to the subjective expectation questions. We investigate how informed parents and male/female youths are about potential returns to schooling and analyze if there are differences in information sets between these different groups. Section 5 analyzes what are the important determinants of senior high school and college attendance choices –expected returns to schooling, risk perceptions or returns in the marriage market–, and whose expectations matter, the ones of the parents or of the youth herself. Furthermore it is analyzed whether determinants of schooling choices and the intra-household decision process depend on the gender of the youth. Section 6 concludes.

2   School Choice, Earnings Expectations and Returns in the Marriage Market

The main purpose of this paper is to model schooling decisions of young poor Mexicans and show how they relate to their expectations on the return and risk to that investment. One possible approach would be the construction of a full dynamic optimization model where individuals choose

current activities taking into account current and future benefits and costs of the alternative choices. This type of models has been proposed, for instance, by Keane and Wolpin (1997) and used in a variety of contexts (see, for instance, Attanasio, Meghir, and Santiago (2005)). In this paper, rather than following this route, we present probit regressions that relate the probability of enrolment to several control variables, and to subjective expectations of earnings and proxies for returns in the marriage market. In a structural framework, the entire probability distribution of future earnings under alternative scenarios determines schooling decisions. Here we assume that the effect of this distribution can be summarized by a few moments of the distribution of earnings at age 25. In addition, we control for current labour market conditions through state dummies and for family background and ability through several variables we observe in our data set.

The reduced form probit regressions we present are informative about the following sets of issues. First, they establish which determinants are important for schooling decisions, subjective expected returns, subjective measures of risk (such as the variance of future earning and the probability of unemployment) or returns in the marriage market. Second, they shed light on the issue of whose expectations are relevant for schooling decisions, the ones of the parents or the ones of the youth. In both cases we are particularly interested in whether determinants of schooling and the intra-household decision process depend on the gender of the child.

In this section, we present our empirical specifications and discuss their usefulness. We start with a basic model, to move to the issue of who makes decisions.

2.1   A Basic Model

To model the decision to enroll in senior high school, having completed junior high, we use a latent index model to be estimated on the sample of junior high school graduates. Denoting with S the enrolment decision ($S = 1$ if the individual decides to attend and $S = 0$ otherwise) we have:

$$S = 1 \Leftrightarrow S^* = \alpha + \sum_{z=1}^{3} \beta_z * E(\log Y)_z + \sum_{z=1}^{3} \gamma_z * Var(\log Y)_z + \sum_{z=1}^{3} \delta_z * P_z^W + R^M \mu + X'\theta + U > 0. \quad (1)$$

where $z = 1, 2, 3$ denotes junior high school, senior high school and college, respectively. The vector X contains a number of control variables that are likely to affect the schooling decision, ranging from measures of individual ability to parental background and state fixed effects and θ denotes the corresponding parameters.

In conventional approaches, proxies for ability, such as GPA and parental education, are supposed to capture differences in psychological costs of attending college as well as in the ability to benefit from high school or college through higher expected returns.[5]

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[5]For example, Cameron and Heckman (1998) and Cameron and Heckman (2001) address the question of credit constraints in college attendance decisions in the US by controlling for ability measures, such as AFQT score and parental education, that are supposed to capture differences in how much people can benefit from attending college. They show that as a result parental income loses significance, which they interpret as evidence against credit constraints in higher education in the US.

One advantage of being able to control for expected returns directly is due to the multi-dimensionality of skills that can hardly be captured even with good data on test scores, while the individual has idiosyncratic knowledge about these skills. More importantly, what matters for the individual's decision is her perception of her skills and her beliefs about how they affect future earnings, conditional on her information set at the time of the college attendance decision. This provides a strong rationale for using "perceived" returns and "perceived" risk. We nevertheless also control for GPA and parental education to proxy for the probability of completing senior high school or college and to control for preferences for education, both of which turn out to be very important determinants of the two schooling decisions.

We include the following measures of people's subjective beliefs in regression (1): $E(\log Y)_z$ is the expected value of the distribution of (log) earnings at age 25 for the scenario that degree z ($z = 1, 2, 3$) is the highest completed by the youth.

In addition to the expected value of earnings, we also want our empirical model to take into account the possibility that the riskiness of a given investment might affect schooling decisions. For this reason, we enter, as determinants of the schooling decision, the variances of the future earnings under different schooling scenarios $Var(\log Y)_z$. As the questions on future expected earnings are conditional on working, we enter the subjective probability of employment under different scenarios, P_z^W.

One would expect a high perceived earnings risk with a junior high school degree to have a positive effect on the probability of continuing to senior high school, and a high variance of log earnings with a senior high school degree to have a negative effect. On the other hand, for the decision to continue to senior high school, a high variance of log earnings after *college* increases the option value of continuing to senior high school. By enroling in senior high school, one can wait for additional information while still having the option to go to college. The specification in equation (1) is flexible enough to be able to capture these aspects.

To investigate whether marriage market considerations are important, we include proxies for returns in the marriage market, R^M, in the regressions. We use data on the ratio of unmarried men to women (with at least a junior high school degree) in the locality of residence and on the size of the locality of residence to capture the "density" of potential partners (compare Boulier and Rosenzweig (1984)). If the likelihood of finding a suitable partner (i.e. a partner with similar or more education) in the locality of residence is low, leaving the locality to go to college or high school has the additional benefit of increasing the chances of finding a suitable partner.[6]The additional indirect returns to schooling, which come in the form of a higher-earning (or in general in the form of a higher-quality) spouse, can be quite considerable (see Goldin (1992)). As the fraction of highly educated individuals in the locality of residence could have an effects on the schooling decision (and is related to the ratio of educated men to women), we include for the fraction of men or women

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[6]Of course, an alternative to leaving the locality of residence for schooling purposes is to move to a bigger city for work (and marriage market considerations). While this is certainly an option for male youths, Mexican parents are usually reluctant to let an unmarried daughter move to a bigger city by herself in order to work, while they might be more willing to let her leave to attend school (commuting to work could be an option if a bigger city is close, which could be combined with search in the marriage market).

with at least a junior high school degree (including any marital status) in the locality of residence to control for potential peer effects.

To model the decision to enroll in college –taken by youths who have just completed senior high school–, an equation analogous to (1) can be used. The only modification we need to make is that we consider only the distributions of earnings under the two relevant scenarios in terms of completed schooling, senior high school and college ($z = 2, 3$). This gives us:

$$S = 1 \Leftrightarrow S^* = \alpha + \sum_{z=2}^{3} \beta_z * E(\log Y)_z + \sum_{z=2}^{3} \gamma_z * Var(\log Y)_z + \sum_{z=2}^{3} \delta_z * P_z^W + R^M \mu + X'\theta + V > 0. \quad (2)$$

As in the case of the high school enrolment decision, we include measures of expected returns and perceived risks, while controlling for individual and family background characteristics and for state fixed effects. To capture marriage market considerations in college choices, we include the ratio of unmarried men to women with at least a senior high school degree in the municipality of residence. We do not use locality measures in this context, as senior high school students often had to leave their locality of residence already (or even their municipality) to attend senior high school. Thus it is less clear for this older cohort what is the right reference area to determine our marriage market proxies. We use the municipality of residence for this cohort keeping in mind that this is most likely a worse predictor of people's perception of availability of mates than when we use the smaller unit of locality as the reference point for the cohort of junior high school graduates. Therefore, we expect it to be harder to assess the importance of marriage market considerations in the context of college choice compared to senior high school choice. To control for potential peer effects, we include in the regression the fraction of men or women with at least a senior high school degree in the municipality of residence.

2.2 Whose Expectations Matter for Schooling Decisions, Parents' or Youths'?

In the context of schooling decisions, it is interesting and important to learn more about the decision-making process within the household. Dauphin, Lahga, Fortin, and Lacroix (2008) are among the few who address the question in how far children are involved in household decision processes. Whose expectations matter for education choices is likely to depend on the age of the child/youth and potentially also the gender. One is therefore likely to obtain different results when modeling the decision to attend primary, secondary and higher education. Especially for youths who have finished high school and are deciding whether to enrol in college, the assumption that all decisions are taken by parents might be too strong. This is relevant from a policy perspective, for example, as it could affect who should receive scholarship money.

Of course, if youths' and parents' expectations were fully rational and based on the same information, they would coincide. However, if either the information set or the way it is processed differ, subjective expectations of the different actors might differ. One goal of this paper is to shed some whether expectations differ systematically between parents and youths and whose expectations are

relevant for the decisions allowing for gender differences.

If one had data on both parents' and youths' expectations one could address this question from an empirical point of view. In particular, neglecting the variance terms, the model we would want to estimate for both school attendance decisions is as follows:

$$S = 1 \Leftrightarrow S^* = \alpha + X'\beta + R^M\mu + \gamma_P * Parents\prime Expectations + \gamma_A * Youths\prime Expectations + W > 0. \tag{3}$$

Obviously the parameters γ_P and γ_A are separately identified only if the two sets of expectations differ. In what follows we will show that this is the case in our data. As we discuss below, our data does contain some information on the subjective expectations held by mothers.[7] As this information is not as complete as for youth expectations, the estimation of equation (3) involves the solution of a number of econometric problems we discuss below.

3 Data

The conditional cash transfer program *Oportunidades,* previously known as PROGRESA, has been associated since its inception with attempts to evaluate its impacts. In this spirit, when the program introduced in 2002/3 a new component known as *Jovenes con Oportunidades,* an evaluation aimed at measuring its impact was started. The data we use was collected in 2005 as part of that evaluation. As we discuss below, in addition to standard variables, the survey contained a detailed subjective expectation module which we use extensively. In this section, we describe the data and its structure. We also describe in some detail the module used to elicit information on subjective expectations and report some evidence on the quality of these data.

3.1 The Survey

The survey "Jovenes con Oportunidades" was conducted in fall 2005 on a sample of about 23,000 15 to 25 year old youths in urban Mexico. The sample was collected to evaluate the component *Jovenes con Oportunidades* of the main conditional cash transfer program in Mexico. *Jovenes con Oportunidades* provides an additional grant to youths in the last three years of high school (preparatoria). This grant is deposited into a bank and can be accessed only upon graduation, if the recipient engages in one of several activities (such as going to college or starting a micro enterprise). Alternatively, the recipient has to wait for a year during which time the amount, about US$300, accumulates at the market interest rate.

The primary sampling units of the evaluation survey are individuals who have just graduated from senior high school or from junior high school and who are eligible for *Jovenes con Oportu-*

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[7]Of course, fathers' expectations could also be important and possibly more important than mothers' expectations. Moreover, it is possible that they are completely different from those held by mothers. We will discuss the consequences of this issue for the interpretation of our results and in this context we will present some evidence for families where the father is not present (in about 25% of families the mother is separated, divorced or widowed) in the next version of this paper.

nidades. There are three eligibility criteria: being in the last year of junior high school (9th grade) or attending senior high school (10 to 12th grade), being younger than 22 years of age, and being from a family that benefits from Oportunidades.

The survey consists of a family questionnaire and a youth questionnaire administered to each household member aged 15 to 25. As a consequence, the youths for whom we have data are not only the primary sampling units but also their siblings, provided they are aged 15 to 25.

The survey provides detailed information on demographic characteristics of the young adults, their schooling levels and histories, their junior high school GPA, and detailed information on their parental background and the household they live in, such as parental education, earnings and income of each household member, assets of the household and transfers/remittances to and from the household. The youth questionnaire contains a section on individuals' subjective expectations of earnings as discussed next.

3.2   The Expectations Module

The subjective expectations module was designed to elicit information on the individual distribution of future earnings and the probability of working for different scenarios about the highest completed school degree. The module starts with a simple explanation of probabilities. In particular, individuals are shown a ruler, graded from zero to one hundred, which is then used to express the probability of future events. The example that is used to illustrate the concept of probability is the event of rain the following day.

After explaining the use of the ruler to express probabilities and having practised that with the rain example, the interviewer moves on to discuss future earnings and the probability of working under different schooling scenarios. The scenarios differ for students graduating from junior high school and those graduating from senior high school. For the former, the interviewer asks to consider three different possibilities: that the student stops after junior high, that the student goes on to senior high, completes it and stops and that the student goes on to college and completes it. For the latter, only two scenarios are considered: that the students stops at senior high school and that the student goes on to college and completes it.

For each of the relevant scenarios, the youth is then asked questions about the probability of working at the age of 25 and about future earnings at age 25. For example, in the case of the last scenario for a senior high school student, the questions are:

1. *Assume that you complete College, and that this is your highest schooling degree. From zero to one hundred, how certain are you that you will be working at the age of 25?*

2. *Assume that you complete College, and that this is your highest schooling degree. Assume that you have a job at age 25.*

   (a) *What do you think is the maximum amount you can earn per month at that age?*

   (b) *What do you think is the minimum amount you can earn per month at that age?*

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(c) *From zero to one hundred, what is the probability that your earnings at that age will be at least x?*

where x is the midpoint between maximum and minimum amount elicited from questions (a) and (b) and was calculated by the interviewer and read to the respondent.

This type of subjective expectations questions has been used extensively in a variety of contexts. In a companion paper (Attanasio and Kaufmann (2008)), we discuss the internal and external validity of the answers to these questions in our survey. In that paper, we show that respondents seem to have understood the questions reasonably well and that the data pass a number of internal and external validity tests. Below, we briefly report some of these results and refer the interested reader to our paper for further details.

In what follows, we relate educational decisions to subjective expectations. This is possible because of the timing of the survey and because of an assumption we make about the accrual of information about future earnings. The Jovenes survey was conducted in October/November 2005, that is two or three months after high school and college had started and enrolment decisions had been made. To use the subjective expectations for the analysis of high school and college attendance decisions, we have to make the assumption that individuals' information sets have not changed during this short period or, if they have changed, that they left expectations about future earnings at age 25 (i.e. seven to ten years later) unchanged. We believe that this is not a very strong assumption.

Students who graduate from junior high school have usually spend three years with their fellow students and then either continue together to senior high school or stop school. For them it is unlikely to learn more about how their own skills (or other factors influencing future earnings) compare to those of the other students in the two/three months after graduation.

As for senior high school graduates deciding about attending college or not, the same assumption can be justified on two different grounds. First, individuals learn about their ability relative to their peers before their attendance decision in July/August, because of entrance tests to college in February/March or in June/July, which individuals have to take to be admitted. Results of these tests are made public before the actual college attendance decision.[8] It is unlikely that individuals will learn significantly more about their ability in the first two or three months at university in addition to what they learned from their relative results at entrance exams. Second, additional learning about future college earnings has been shown to happen in the last year(s) of college (see Betts (1996) for evidence on the US) and not in the first few months. This is supported by evidence from our data: there is no significant difference in the cross-sections of expected returns to college for students, who just started college, compared to the one of students who are in their second year. On the other hand, return distributions are significantly different for students in higher years.

An additional potential concern is the possibility that individuals try to rationalize their choice two or three months later, i.e. individuals, who decided to attend college, rationalize their choice by

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[8]Individuals can and usually do take entrance tests at several universities and if they are not admitted, they can continue to take tests at other universities.

stating higher expected college earnings (and/or lower expected high school earnings), and those, who decided not to attend, state lower expected college and higher high school earnings. A similar argument can be made for individuals deciding about high school attendance. To address this concern, we use the cross-section of expected returns of a cohort that is one year younger, i.e. just starting grade 12 (or grade 9 in the case of the high school attendance decision) as a counterfactual distribution for the cross-sectional distribution of expected returns of the senior (junior) high school graduate sample before they had to decide about college (high school) attendance. We find no significant differences between the distributions of expected returns, neither for the junior high school graduate sample nor for the senior graduates.[9]

3.3 Calculation of Expected Earnings, Perceived Earnings Risk, and Expected Gross Returns to Schooling

The answers to the three survey questions (2(a)-(c)) (see preceding section) are used, with some additional assumptions, to compute moments of the individual earnings distributions (compare Guiso, Jappelli, and Pistaferri (2002)) and expected gross returns to college. As a first step, we are interested in the individual distribution of future earnings $f(Y^z)$ for all three possible scenarios of highest schooling degree, where $z = 1, 2, 3$ denotes having a junior high school degree, a senior high school degree and a college degree, respectively, as the highest degree. The survey provides information for each individual on the support of the distribution $[y_{min}^z, y_{max}^z]$ and on the probability mass to the right of the midpoint, $y_{mid}^z = (y_{min}^z + y_{max}^z)/2$, of the support, $p = Pr\left(Y^z > y_{mid}^z\right)$. Thus we need an additional distributional assumption, $f(\cdot)$, in order to be able to calculate moments of these individual earnings distributions, using the three pieces of information on y_{min}^z, y_{max}^z and p.

In Attanasio and Kaufmann (2008), we use three different distributional assumptions, step-wise uniform, bi-triangular and triangular, where the first and latter two represent relatively extreme cases on a spectrum. The last two give more weight to the middle of the support and less to the extremes. The first, instead, implies a relatively large value for the total variance (we rule out the possibility that the density function is U-shaped, giving more weight to the extremes). In our companion paper, we show that the first moment of the individual distribution is extremely robust with respect to the underlying distributional assumption, while the second moment is obviously larger for the step-wise uniform distribution that puts more weight on extreme values. In this paper we present results based on the triangular distribution, but we perform robustness checks using the other two distributional assumptions and point out differences if they occur.

With an assumption on the functional form of the individual distribution, $f(.)$, we can express expected earnings and variance of earnings for schooling degrees $z = 1, 2, 3$ for *each* individual as

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[9]A Kolmogoroff-Smirnov test on equality of the distributions and t-test on means can not reject the null of equality (results from the authors upon request).

follows:

$$E(Y^z) = \int_{y^z_{min}}^{y^z_{max}} y f_{Y^z}(y) dy$$

$$Var(Y^z) = \int_{y^z_{min}}^{y^z_{max}} (y - E(Y^z))^2 f_{Y^z}(y) dy.$$

We will perform the following analysis in terms of log earnings:

$$E(\ln(Y^z)) = \int_{y^z_{min}}^{y^z_{max}} \ln(y) f_{Y^z}(y) dy$$

$$Var(\ln(Y^z)) = \int_{y^z_{min}}^{y^z_{max}} (\ln(y) - E(\ln(Y^z)))^2 f_{Y^z}(y) dy$$

and we can thus calculate expected (gross) returns to senior high school ($z = 2$) and college ($z = 3$) as:

$$\rho^z = E(\ln(Y^z)) - E(\ln(Y^{z-1})).$$

3.4 Mother and Youth Expectations

To estimate an equation like (3) in Section 2.2 and determine whose expectations matter for enrolment decisions, one would need data on both parents' and youths' expectations. The former will be approximated with data on mothers' expectations, as we lack fathers' expectations data.[10]

Unfortunately, the questions on the subjective distributions of earnings were not asked to both mother and children at the same time. However, for all surveyed families mothers were asked a differently phrased question on expected future earnings. In particular, the question always directed to mothers was phrased in the form of point expectations:
Assume that the youth finishes Junior High School (Senior High School/College), and that this is his/her highest schooling degree. Assume that he/she has a job at age 25.
What do you think can he/she earn per month at that age?

While this information is certainly useful, the fact that the question is framed in a completely different way from the questions asked to the youth raises a number of issues. First, one has to rely on the point expectation without being able to compute any moment of the distribution. Second, one is not even sure which measure of location of mothers' earning distributions this question answers and how it relates to the mean. However, an additional feature of the data allows us to address, to a certain degree, this second issue.

The interviewer visited the primary sampling units and their families in October and November 2005 and interviewed the household head or spouse using the family questionnaire and youths between age 15 and 25 using the "Jovenes" (youth) questionnaire. If a youth was not present, the household head or spouse answered the Jovenes questionnaire as well. As a result, for almost half

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[10]Fathers' expectations could be as important, if not more important than mother expectations. Moreover, it is possible that they are completely different from those held by mothers.

the sample, the questions on the subjective distribution of future earnings were not answered by the youth herself. Instead mothers stated their expectations about future earnings of her child(ren) that are not present during the interviewer's visit. For this part of the sample, therefore, we have both point expectations and the probability distribution of future earnings perceived by the mother. In a companion paper (Attanasio and Kaufmann (2008)) we study extensively how mothers' points expectations of future earnings relate to mothers' expected earnings as derived from the subjective probability distribution. Here, we report some evidence on this issue in Section 4.3.

The fact that for half the sample the earnings expectations questions were answered by youths, while for the other half the questions were answered by the mother allows to address another important issue. If subjective expectations of mothers and youths were objective and rational expectations based on the same information, it would not matter who would answer (and the issue of whose expectations matter would be a moot one). It is therefore interesting to establish, whether the expectations of future earnings are systematically different depending on who answered the question.

In Section 4, we compare the expectations of mothers and youths (both asked in the form of a distribution of earnings). A straight comparison shows that these expectations are systematically different. Given the structure of the data, these differences can arise either because the questions answered by the mother and by the youth are measuring two different and distinct objects (the subjective probability held by the mother and the subjective probability held by the youth) or because the sample of youths absent from the interview (and for whom the question is answered by the mother) is systematically different from those present during the visit.

As discussed above, we want to establish whether the subjective expectations of youth and their mothers are systematically different. To correct for the possibility that the observed differences are due to sample selection we use a standard Heckman two-step approach (see Heckman (1979)). To achieve non-parametric identification of such a selection model, we need one or more variables that determine whether the question is answered by the youth rather than the mother and that, plausibly, do not affect the expectations directly. In our context we have a set of such variables that capture the timing of the interview (week of the year, day of the week and time of the day). These variables are strongly significant determinants of who is the respondent (see Tables 14 and 14 for young and old cohort in Appendix B).

4   Subjective Expectations

Before using the data on subjective expectations to model schooling choices, we describe the general patterns and provide some evidence on their quality. Further details on internal and external validity checks are contained in the companion paper Attanasio and Kaufmann (2008).

We start with some summary statistics of the individual and family background characteristics of the youth, before presenting descriptive statistics of our expectations data, including a comparison between mother and youth expectations. We also compare two different expectation measures (the one derived from subjective earnings distributions and the point estimates) to data on Census

earnings. We then move on to test how expectations vary with individual and family background characteristics and with average earnings in the municipality of residence.

Finally, we regress mothers' expectations from the questions on individual distributions on mothers' point expectations and again an extensive set of controls to compare the two different ways of asking expectations questions.

4.1 Descriptive Statistics: Characteristics of the Youth

Tables 1 and 2 report summary statistics of individual and family background characteristics for the "young" cohort (junior high school graduates) and the "old" cohort (senior high school graduates), respectively. We present results separately for male and female youths and for the two samples of mother and youth respondents to investigate whether there are potential sample selection problems when performing the analysis separately for each type of respondent.

Around 78% of boys with a junior high school degree decide to enroll in senior high school compared to 81% of girls. In terms of college enrollment 29% of male high school graduates enroll in college compared to 31.4% of girls. Mexico has reached the stage where boys' and girls' educational attainment is very similar, while for example in the US girls/female youths have overtaken boys in terms of high school and college attainment (see Goldin, Katz, and Kuziemko (2006)). In the case of college, enrollment rates for girls are 23% for the youth sample compared to 40% of the mother sample (24% versus 33% for boys), as youths who enroll in college are less likely to be at home when the interviewer arrives to conduct the survey. But differences between the samples of mother and youth respondents are not significant in any of the four cases.

In what follows, we make use of data on GPA (grade point average between 0 and 100) of junior high school as a proxy for academic achievement. Tables 1 and 2 show that girls have a higher GPA than boys for both junior and senior high school graduates, while the difference is significant only for the former case. This is consistent with empirical evidence for many countries that girls are outperforming boys at school (see Goldin, Katz, and Kuziemko (2006)). Comparing Tables 1 and 2 shows that individuals of the older cohort have a slightly higher GPA than those of the young cohort. This most likely reflects the fact that the senior high school graduates ("old" cohort) are a self-selected sample compared to the junior high school graduates ("young" cohort) who might or might not attend and finish senior high school. In the case of the young cohort, there are significant but small differences between the sample of mother and youth respondents for girls, with higher GPA for the "mother sample". For the old cohort, there are significant but small differences between mother and youth sample, this time only for boys, again with higher GPA for the "mother sample". This might be explainable by better performing students being more likely to be away for high school or college and thus not at home to answer the questionnaire.

We also make use of data on height and body mass index of the youth, both of which have been shown to be correlated with actual earnings (see Strauss and Thomas (1998)).[11] We will show that –interestingly– these measures are also correlated with earnings *expectations*. Thus we will show

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[11]The body mass index is defined as weight divided by height squared and we use medical definitions for categorizing who is underweight, overweight or obese.

that height and being underweight, overweight or obese affect schooling decisions after controlling for their impact on earnings expectations and income, wealth and education of the parents/family and discuss possible interpretations. Boys are about 8 cm taller than girls (162 cm versus 154 cm) for the young cohort and this differences is larger for the old cohort, as boys are still growing between age 15 and 18 while girls nearly reached their final height already (165 cm versus 155 cm). Overall girls are slightly more likely to be overweight or obese (13% and 3% respectively compared to 11% and 2%), while boys are slightly more likely to be underweight for the young cohort (15% versus 13% for girls). Differences between mother and youth sample are only significant for girls: when mothers respond girls are significantly (but only slightly) taller (154.6 cm instead of 153.66 cm) and more likely to be overweight (12% to 15%).

To control for parental education as one of the most important determinants of children's schooling choices, we use information on parents' years of completed schooling in the form of four education dummies for both mother and father (unless the household is single headed): for primary education, junior and senior high school and university. For the young cohort, about 70% of mothers and fathers have only some primary education, while around 24% have attended junior high school. Fathers' education is slightly higher than that of mothers: about 6% have attended senior high school (3% for mothers) and 1-2% have some university education (less than 1% for mothers). For the old cohort, parents are slightly less educated (75-80% primary and 18-20% secondary education). There are some small differences between mother and youth sample, but only for girls, where the mother sample is slightly less educated.

We create three per capita income categories, where the thresholds are equal to twice and four times the minimum wage.[12] For the young cohort, about half the sample is in the lowest income category and thus relatively poor –reflecting the fact that our sample only consists of Oportunidades families–, while 30% are in the second highest and the remaining 20% in the top income category. The old cohort is slightly poorer with about 60% in the lowest income category. Again there are significant differences between mother and youth sample only for girls, and –consistent with lower parental education (see above)– the mother sample is poorer.

The same pattern for young and old cohort can be found in terms of father's occupation: For the young cohort, 33% of fathers are unskilled workers, another 44% employees, around 20% are self-employed and 2% are family workers. For the old cohort the numbers are 43%, 28%, 24% and 3%, respectively. Thus fathers in the youth sample are significantly less likely to be unskilled workers or self-employed and more likely to be employees. In both cohorts, less than 1% of fathers are employers. Comparing mother and youth samples, there are only significant differences for boys, in that fathers in the youth sample are significantly more likely to be employees that in the mother sample.

To conclude: the features of the sample reflect that we are working with families that are beneficiaries of a welfare program targeted to the poorest sector of Mexican society. There are some (usually small but) significant differences in individual characteristics and family background

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[12]See Appendix B for a detailed description of which income measures we use and how we constructed the described per capita income categories and an index created from information on family income and wealth.

variables between the subsample where the earning expectations questions were answered by the youth and the subsample where they were answered by the mother. This finding points towards a potential sample selection in our analysis of these questions which we address as discussed in the previous section. Differences between girls and boys are as expected and confirm findings of other empirical studies, for example girls outperforming boys at school. We now turn to differences in subjective expectations.

4.2 Descriptive Statistics: Subjective Expectations

Tables 3 and 4 present summary statistics for the variables derived from the subjective expectations questions for the young and old cohort. The top panel of the Table reports expected log earnings and expected (gross) returns. The bottom panel, instead, focuses on perceived earnings and employment risk for three different schooling degrees, junior and senior high school and college (or the latter two in the case of the old cohort), as well as the skewness of the individual distributions. We summarize these measures separately for male and female youths, and separately for mother and youth respondents.

Not surprisingly, but reassuringly, expected log earnings increase in schooling level. Gross returns to schooling –measured as the difference between expected log earnings of two consecutive schooling degrees– are large and larger for college than high school. Comparing male and female youths when youths respond themselves, males expect higher earnings and lower returns consistent with a gender earnings gap that decreases in schooling level (see Table 5 for a comparison with Census earnings). Mothers on the other hand expect surprisingly similar earnings and returns for boys and girls.

Standard deviations of log earnings are one possible measure of (perceived) earnings risk and commonly used for measuring risk in the case of observed earnings. It is important to point out that having information on the individual earnings distributions (e.g. in the form of minimum, maximum and probability above the midpoint) allows us to derive a measure of "true" risk, as perceived by the individual, while using the variability of observed earnings data will confound risk with unobserved heterogeneity. Moreover, observed variability will not distinguish between predicted and unpredicted changes.

Perceived earnings risk, as measured by the standard deviation of logs, decreases with education and is lowest for the expectations of earnings conditional on having a college degree. At the same time the probability of work increases with education. Thus lower income risk could be another important motivation, in addition to higher expected earnings, for achieving higher schooling. Male and female youth respondents perceive a very similar level of earnings risk, while males perceive a higher probability of being employed, where the difference decreases again in schooling level.

One key question we aim to address in this paper is whether mothers' expectations or youths' expectations are relevant for school choices. For this question to have content, it is necessary that the expectations of mothers and youths are indeed different, which would point towards important differences in their information sets (for example about skill prices and about which role individual characteristics play in affecting potential future earnings). Tables 1 and 2 suggest that the subsam-

ples of individuals for whom the questions were answered by the mother are significantly different in some important dimensions of individual and family background characteristics. For girls in the young cohort for example, the youths who answered the subjective expectations questions (because they were present at the moment of the interview) are more likely to have a lower GPA and to be shorter but also to have slightly more educated mothers and to be from richer families. An important question, therefore, is whether the observed differences in expectations are completely explained by differences in both observed and unobserved factors between the mother and youth subsamples, or whether they reflect genuine differences in subjective expectations between youths and mothers.

To shed light on this question, we perform a test of the difference in expectations, controlling for selection. This is done with a model a la Heckman and using the timing of the interview as an instrument for who answers the questionnaire. In particular, we assume that selection into the subsamples where the mother or the youth answers the expectations questions is determined by the following equation that determines, whether the respondent is the youth ($R = 1$) or not, ($R = 0$):

$$R = 1 \Leftrightarrow R^* = \delta + X'\kappa + Z'\lambda + \epsilon \geq 0, \tag{4}$$

where the vector of variables Z reflects a set of variables (week of the year, day, time of the day and interactions between day and time of the day when the interview was conducted), which are strong and significant predictors of who is the respondent (see Tables 14 and 15 in Appendix B) and are assumed not to have a direct effect on expectations.

The third and sixth column of Tables 3 and 4 present results of the differences in mothers' and youths' expectations after controlling for self-selection and for differences in the composition of the two subsamples.

For the young cohort, mothers' expectations about future earnings of her children are significantly higher than the expectations for the youth sample. For girls this is true for all schooling scenarios, while for boys, mothers only expect higher junior high school earnings. In terms of expected returns, mothers expect lower senior high school returns for both boys and girls and higher college returns for boys.

For the old cohort, the only significant difference between mother and youth sample is in terms of expected earnings of senior high school for girls, where again mothers expectations are higher than the one of the youth. There are no significant differences in terms of returns.

Perceived earnings risk is lower for mother respondents than for youth respondents (in particular for boys) and the perceived probability of working is lower for mother respondents. In both cases differences are only significant for the young cohort.

Lastly we summarize skewness of the individual earnings distributions: On average individual earnings distributions are left-skewed (i.e. the probability to have earnings above the midpoint is larger than 0.5) and increasingly left-skewed with increasing schooling level. The only significant difference between mother and youth respondents is for junior high school earnings. Interestingly, earnings distributions are more left-skewed for boys than for girls.

The results in Tables 3 and 4 suggest that there are genuine differences in mothers' and youths'

expectations. Informational differences between mother and youth respondents are particularly important for the young cohort. These results underline the importance of understanding whose expectations are relevant for school choices, the ones of the mothers or the ones of the youths themselves. We pursue this issue in Section 5, after presenting some results to support the validity of the expectation data that we use in the rest of this paper.

Furthermore, the two tables show that there is a considerable amount of heterogeneity in expectations, as reflected by standard errors in brackets. This still holds after controlling for an extensive set of individual and family background characteristics (see Tables 6 to 9) reflecting the importance of unobserved heterogeneity in cognitive and social skills and differences in information sets e.g. about skill prices.[13]

4.3 Earnings Expectations and Observed Census Earnings

The goal of this section is to compare subjective expectations of earnings with earnings data from the Census. We are particularly interested in comparing the pattern for the different respondents, that is for boys and girls and for youth and mother respondents, whose expectations we will use later on as potential determinants for schooling choices. We also compare the measures of expectations as derived from the individual earnings distribution with the mothers' point expectations about the future earnings of her children.

We have already discussed how we use the questions on the individual earnings distributions to compute expected (log) earnings and the nature of the question on mothers' point expectations. We use Census data of the year 2000 and compute average log earnings (by gender and by schooling degree) in the municipality of residence for each youth in the sample. While the expectations questions refer to earnings at age 25, we use earnings of individuals who are between 25 and 30 years old to get a sufficiently large sample size for each municipality.

While the comparison between the subjective expectations data and the Census data is certainly informative, if nothing else to check whether the subjective expectations data are roughly of the same order of magnitude, a direct comparison and a formal test of equality between the two would be misleading. There are many reasons why the Census data and the subjective expectations would be different. First, the former refer to a specific year (2000) and are therefore affected by specific aggregate shocks that might have been relevant in that year. To test some version of Rational expectations, one would need several years of realizations to average out aggregate shocks. Second, the data refer to individuals who were between 25 and 30 in 2000 and therefore belong to a different cohort from the individuals whose expectations were elicited in our survey. Finally, the Census data report realizations for individuals who self-selected into a specific education level and do not contain "counterfactual" earnings, which are instead elicited in the expectations questions. If more able individuals select into education, one would expect returns to education to be higher in the Census than in our expectations data.

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[13]An alternative explanation is that the remaining "heterogeneity" reflects noise. But we show that subjective expectations are able to predict schooling choices even after controlling for an extensive set of individual and family background characteristics. This suggests that at least part of the heterogeneity captures factors unobserved to the researcher, such as skills and information about skill prices, which influence earnings expectations.

From these considerations, it should be clear that to establish whether the elicited expectations are 'rational' is probably impossible. And, in a sense, it is not too important: for modeling education choices what matters is whether the elicited expectations reflect the subjective expectations that people base their decisions on.

Table 5 presents mean expected earnings based on the distribution of earnings, point expectations and Census earnings for different schooling degrees. Mean earnings are presented separately for boys and girls and mother and youth respondent. To correct for sample selection we present estimates that are based on the Heckman selection correction (again using the timing of the interview as an exclusion restriction). Estimates for the young (old) cohort are in the top (bottom) part of the table.

For the young cohort, all respondents expect lower junior high school earnings than observed in the Census, similar senior high school earnings and higher college earnings. This is consistent with a recent trend of a decrease of junior high school earnings in real terms, stagnating senior high school earnings and a significant rise in college earnings. While this pattern is similar for boys and girls, girls' expected earnings are closer to current realizations than the ones of boys. Mothers' point expectations are close to observed earnings for boys (apart from higher expectations for college earnings), while they are larger than observed earnings for girls.

Girls responding themselves expect lower earnings than boys, though the expected gender gap is smaller than the one observed in Census earnings in 2000. The expected gender gap is virtually nonexistent, when mothers respond. In terms of returns, girls' and boys' expectations are similar for returns to high school and college, while according to Census earnings, returns are significantly larger for girls. While girls expect returns that are similar to the ones observed, boys expect significantly higher returns in the future.

For the old cohort, youths expect senior high school earnings that are similar to observed Census earnings, while they expect significantly larger college earnings. Thus youths' expected future returns that are significantly larger than contemporaneous returns based on Census data. Mother respondents on the other hand expect larger senior high school and larger college earnings and their expected returns to college are similar to observed returns.

As for the different measures of subjective expectations, Table 5 shows that there are large level differences between expectations based on point estimates and those that are based on the earnings distributions, in particular for lower schooling levels. Implied returns to high school and college are smaller when based on expectations from point estimates and in this case are relatively close to observed returns.

It is worrisome that expectations differ quite substantially depending on how the questions were asked. Yet if this only represents a shift in the level, but both measures capture unobserved heterogeneity in expectations (e.g. due to unobserved skill differences and heterogeneity in information sets) in a similar way, then this does not pose a major problem for our analysis of the role of expectations in schooling choices. For the sample where both questions were answered by the mother, the correlation coefficient between expected earnings derived from the subjective expectations questions and the point expectations is between 0.52 and 0.57 for the young cohort (for the

three different schooling levels and for boys and girls) and between 0.46 and 0.58 for the old cohort.

To analyze this relationship further, we also regress3e mother's expected earnings (derived from the elicited probability distribution) on her point expectations as well as on average Census earnings (by gender) in the municipality of residence and an extensive set of individual and family background characteristics. The results show that the two measures of expectations are strongly correlated, even after controlling for all the observable variables we consider (results available upon request). This evidence suggests that both measures capture important unobserved individual differences arising for example from unobserved heterogeneity in skills and information.

4.4 Predictors of Earnings Expectations: Individual and Family Characteristics and Local Earnings.

In this subsection we relate subjective expectations to various observable variables. While the results we obtain are not intended to be interpreted as estimates of a behavioral model of expectation formation, it is of substantive interest to learn how earnings expectations vary with individual attributes. Why should individual characteristics and family background be able to predict expectations? Rational expectations would imply that the same factors that predict actual earnings also predict expectations (conditional on these factors being in the information set of the individual). For example people with higher test scores have been shown to have higher earnings. Thus more able people should also expect higher earnings, if they are rational and know that they are able.

A comparison of the relation between subjective expectations and observable variables on the one hand, and actual earnings and the same set of variables on the other hand, could be seen as a test of rationality. We should remember, however, that a formal test of rationality would be difficult due to the same issues that we discussed when presenting the comparison of average expected earnings to average Census earnings. Moreover, as we mentioned above, subjective expectations do not have to be rational to be valid or useful. Having said this, however, we would expect people to draw inferences about their own potential earnings from what they observe from others. Thus finding that expectations vary with observable characteristics in a way similar to observed earnings lends support to their validity.

In the last section we found that there are important level differences in expectations between mothers' expectations about her child's earnings and the youths' expectations about their own earnings. Comparing how mothers' and youths' expectations vary with characteristics of the youths will provide further evidence on differences in information sets between mothers and youths, for example in terms of the role they attribute to different characteristics in determining future earnings.

Before comparing the determinants of school choices for male and female youths and investigating the role of expected earnings and perceived earnings risk, we would like to understand if there are informational differences between them. The results of this section will provide evidence on this question.

To pursue this line of investigation we regress expected individual earnings on a number of individual, household and municipality level variables. Tables 6 and 7 display results for boys and girls of the young cohort, respectively, while Tables 8 and 9 present results for the old cohort.

In each table, we report separate regressions for answers provided by the youth and answers provided by the mother. As discussed above, we correct for the possibility of selection bias using a standard Heckman selection model, with the timing of the interview as exclusion restriction. For the younger (old) cohort, we report the regressions for expected earnings under the three (two) possible scenarios about completed schooling at age 25 for this cohort.

The municipality level determinants of subjective expectations that we consider in our regression are average (log) Census earnings in the municipality of residence for the three schooling levels we are considering (junior high school, senior high school and college). These variables are meant to capture local labour market conditions. We add these variables to the regressions to see in how far people base their expectations on the earnings they see of people around them. The individual variables we add to our regression are GPA, height and dummies for being underweight, overweight obese. Finally, the household level variables we consider are dummies for mothers' and fathers' education, for per-capita income and for fathers' occupation. All specifications include state fixed effects.

Tables 6 to 9 shows that the coefficients have, by and large, the expected signs, but that there are important differences in the size and even sign of some coefficients between mother and youth respondents and between boys and girls.

For boys of the young cohort, earnings expectations are significantly correlated with men's average earnings by education level in the municipality of residence, which is not the case for mother respondents. Interestingly, our measure of academic achievement, GPA, seems to be much more important in mothers' expectations than in the youths' ones. The same is true for the youth being underweight or obese and for household income and father's occupation. If the youth is underweight or obese, the mother expects significantly lower earnings. Higher parental income and having a father who is employer is also correlated with higher expected earnings, potentially resulting from parents who are better "connected" or who might be able to employ their children themselves.

These results provide evidence of important informational differences between mothers and boys of the young cohort. These informational differences seem less important for girls. Both mothers and girls expect significantly higher college earnings when earnings of college-educated workers in the municipality are higher. They also attribute similar importance to the effect of height and being underweight or obese on future earnings, that is expected earnings increase in height and or lower if the youth is underweight or obese. Mothers and girls expect higher earnings if parental income is higher. There are some differences though in terms of the role of academic achievement and fathers' education: Mothers expect higher earnings if the daughters' GPA is higher and if the father is more highly educated, while these factors are not correlated with the girls' own expectations.

To conclude, the evidence of this section suggests that our sample of Mexican youths and their mothers understand the expectation questions and give meaningful answers. At the same time there are important differences in information sets between mothers and youths, as they differ in their expectations about earnings of one and the same person –the youth herself–, suggesting that conventional approaches using earnings realizations and strong assumptions on rationality

and information sets could be problematic. In particular it is impossible with such approaches to address the question whose expectations matter for schooling choices. Data on parents' and youths' subjective expectations on the other hand allow to gain insights into the intrahousehold allocation process of human capital investments. Furthermore, we perform this analysis separately for boys and girls to understand if and how these intrahousehold decision processes differ for children of different gender and also to compare the role of different determinants of schooling, such as expected earnings and perceived risk, for male and female youths.

5   School Choices: the Role of Earnings Expectations, Risk Perceptions and Returns in the Marriage Market

In this section, we analyze whether individuals' expectations about future returns to schooling, risk perceptions and returns in the marriage market are important predictors of their educational decisions. In particular, we first investigate whose expectations are relevant for different schooling decisions, those of the youths or of the parents (as proxied by mothers' expectations) and whether the intra-household decision process differs by the gender of the youth. Second, we are interested in whether the role of potential determinants of schooling, such as expected returns, risk perceptions and returns in the marriage market, are different for male and female youths.

We present separate estimation results for boys and girls on the two cohorts we consider: youths who have completed junior high school and decide whether to enrol in senior high school, and youths who decide whether to enroll in college, having completed senior high school.

Having shown that mothers' expectations are significantly different from those of their children, we can sensibly address the question discussed in Section 2.2 about whose expectations are relevant for education choices. However, to be able to get an answer, we need to observe both mothers' and youths' expectations for the same group of individuals. For this purpose, therefore, we have to use the subsample where the youth answered the subjective expectations questions and utilize the mother's point expectations answers as a proxy for her subjective expectations. As in the descriptive analysis in section 4.2, here and in all subsequent analyses where we use only one subsample, we take into account the selected nature of our data by using a Heckman selection model. In particular, in the following analysis of education choices we estimate the participation ("respondent") equation (4) jointly with the schooling choice equation. Although the discrete choices of schooling conditioned on selecting into a subsample are non-parametrically identified by using the time and date of interview variables as exclusion restrictions (as in Section 4.2), we will be fitting a bivariate probit by maximum likelihood.

As we discussed above, the point expectations elicited from mothers in our survey can be used as a proxy for mother's expectations, or at least for the first moment of mothers' expectations. Unfortunately, we will not be able to use a similar approach for higher moments of earnings expectations or for the perceived probability of working. For these variables we will be forced to use whatever is available, which means the variables derived from the youth answers for the youth sample and the variables derived from the mothers' answers for the mother sample. We will discuss

these issues in detail below.

5.1 Results

5.1.1 High School Attendance Choice

We start with the analysis of the decision to enrol or not in high school for youths who have just finished senior high school. As shown in Table 1, around 78% of boys and 81% of girls graduating from junior high school decide to enrol in senior high school.

Table 10 reports our estimates of the model in equation (1) that relates schooling decisions to expected future earnings under different schooling scenarios –as expected by both the mother and the youth–, to returns in the marriage market captured by the likelihood of finding a suitable mate and to a set of controls. Columns 1 and 2 present estimation results for boys, while column 3 and 4 present results for girls. As discussed above, this model is estimated on the subsample of individuals for whom the youth answered the expectations questions. Our choice of estimator takes into account the selected nature of this sample. Moreover, while youths' expectations are derived from the answers to the subjective expectations questions, the mothers' are approximated by the point expectations available in the survey. In the tables, we report the coefficients of the relevant variables on the probability of enrolling into senior high school (marginal effects will be included in the next version of the paper). All specifications include state fixed effects. A complete set of results including the selection equation can be found in the Appendix.

In terms of individual characteristics, academic performance, as measured by the GPA, is an important determinant of the decision to attend senior high school. Past academic performance is both a measure of the psychological costs or benefits of getting further education and also captures the likelihood of being able to complete senior high school (compare Stinebrickner and Stinebrickner (2009)). Being single strongly increases the likelihood of attending senior high school for girls but not for boys. As expected, parental education is an important determinant of the probability of going to senior high school, but having a highly educated mother and father appears more important for girls than boys. Fathers' occupation matters as well for the high school attendance decision: for girls, having a father who is self-employed (instead of an unskilled worker) significantly increases the likelihood of attending senior high school.

Column 1 and 3 of Table 10 present results of a specification that includes expected earnings of the youths and point expectations of the mothers, for boys and girls respectively. Columns 2 and 4 add perceived earnings and employment risk from the perspective of the youth, as we only have information on mothers' point expectations in this youth sample. Results show that for boys, the likelihood of attending college increases in mothers' expectations about college earnings (and decreases in mothers' expected junior high school earnings, though this is not significant on conventional levels). Adding measures of the youths' risk perceptions shows that also the perceived probability of employment with a college degree is important in predicting the youths likelihood to attend high school. For girls on the other hand, none of the measures of subjective expectations of earnings are significant, while the Table provides suggestive evidence that returns in the marriage

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market play a role for girls: If the likelihood of finding a suitable (i.e. similarly or more highly educated) partner is low (as proxied by the ratio of unmarried men to women with at least a junior high school degree), than the girl is more likely to attend senior high school, as this might increase her chances of finding a suitable mate.

The evidence of Table 10 suggests that for boys both mothers' and youths' own expectations matter. For girls on the other hand, it is not clear if subjective earnings expectations are not important in general or whether mothers' risk perceptions are important, which are not available in the youth sample. Therefore in Table 11 we estimate the model of high school attendance choice for both the mother and the youth subsample (Columns 1 and 2 for boys and Columns 3 and 4 for girls), which contain information on expected earnings and risk for mothers in the mother sample and for youth in the youth sample.

Table 11 provides further evidence on the fact that for boys both mothers' and youths' expectations matter. For girls on the other hand, mothers' perceptions about unemployment and earnings risk appear relevant, in that a higher perceived likelihood of being employed with a college degree increases the likelihood of the girl to attend high school, while the likelihood decreases with a higher perceived earnings risk with a high school degree. Results of the previous section suggest that girls are as well informed about potential earnings than boys, so this result does not appear to be driven by girls reporting less reasonable or more noisy beliefs. While monetary returns seem less important for girls, returns in the marriage market appear important.

This section provides evidence that in the context of senior high school enrollment decisions, it is important to take into account the gender of the child for understanding the intra-household decision-making process and for understanding the importance of different determinants of schooling.

5.1.2 College Attendance Choice

We now turn our attention to the decision to enroll in college for youths who have just finished senior high. As can be seen in Table 2, 29% of male high school graduates enroll in college compared to 31% of girls. We model this decision using again equation (2), which relates the probability of enrolment to a set of control variables and future earnings under different schooling scenarios, as expected by both the mother and the youth. Table 12 reports our estimates of this model separately for boys (Columns 1 and 2) and girls (Columns 3 and 4). As before, the model is estimated on the subsample of individuals for whom the youth answered the expectations questions so that our estimator takes into account the selected nature of the sample. Moreover, as before mothers' expectations are approximated by the point expectations available in the survey.

Individual and family background variables have the expected signs: the probability of college attendance is increasing in GPA and in parental education. Cost variables, such as distance from university and the level of tuition fees in nearby universities are also important determinant of the decision (for the data sources and the exact definition of the variables, see Kaufmann (2009)), even though the level of tuition fees in a nearby university seems to affect only girls. Girls who are single have a significantly higher probability of attending college,which is not the case for male youths.

Interestingly, higher parental income appears more important for girls than boys in the decision to attend college. For boys having a father who is an employee (compared to unskilled worker) has a positive effect on the enrollment decision of boys.

Columns 1 and 2 of Table 12 show that the youths' own expectations about earnings for high school and college are important determinant of the college attendance choice. Parents' expectations and risk perceptions on the other hand do not seem to matter, as coefficients on mothers' expected earnings are very close to zero and insignificant. For girls on the other hand, earnings expectations are again not significant. The coefficient on the ratio of marriageable men to women (with at least a senior high school degree) has the expected sign (more available highly educated men in the municipality decrease the likelihood to leave for college) but is not significant. As discussed, we use the municipality of residence as the reference area for the ratio, because many senior high school students had to leave their locality (or even municipality) to attend senior high school. At the same time –given that municipalities have on average more than 30.000 inhabitants– this measure is less likely to capture people's perception of availability of mates than when we use the smaller unit of locality (as we did for the cohort of junior high school graduates). Thus it is not surprising that –in the context of the college choice– the coefficients on the ratio are smaller and not significant compare to the senior high school choice and that it is harder to detect a significant effect of marriage market considerations.

As explained above the specifications in Table 12 cannot rule out, that mothers' risk perceptions matter in college attendance choices of the youths, as the youth sample does not contain information on these measures. Therefore Table 13 presents estimates for the mother and the youth sample, which contain expected earnings and risk perceptions of mothers and youths respectively (Columns 1, 2 for boys and Columns 3, 4 for girls).

Table 12 strengthens the previous evidence for boys: only the youth's own expectations about future earnings are significant, while the effects are close to zero and insignificant for mothers. Risk perceptions do not seem to matter for the college attendance choice of male youths. For girls on the other hand, mothers' risk perceptions seem to matter once again: the likelihood of college attendance of girls increases in the mothers' expectation that the girl will be employed with a college degree, but also expected college earnings are important. Girls own expectations are not significant.

6   Conclusion

The goal of this paper was to improve our understanding of human capital investment decisions, in particular the decisions about receiving secondary and post-secondary education.

We have analyzed two aspects of this decision process: firstly we shed some light on the decision-making process within the household in terms of the question whose expectations matter in schooling decisions, while we allow the decision-making process to depend on the gender of the child. And secondly we investigate the role of potential determinants of schooling, such as expected monetary returns, risk perceptions and returns in the marriage market, and we analyze whether the

determinants differ depending on the gender of the child.

We find that for boys both mothers' and youths' expectations matter for the high school choice, while for the college attendance choice only the ones of the youths appear relevant. For girls on the other hand, only mothers' expectations seem important for both high school and college attendance decision. This does not seem to be driven by girls' being less informed than boys, while we do find evidence of important differences in information sets between mothers and youths and boys and girls.

In this analysis we have taken into account one determinant that has often been neglected in this analysis, that is perceptions of earnings and employment risk for different schooling scenarios. We find that expected returns to schooling and risk perceptions are important determinants of schooling decisions, but play different roles in the decision to attend senior high school and college and they play different roles depending on the gender of the youth. While for boys risk perceptions seem be more important in high school decisions and expected returns appear more relevant in college attendance decisions, for girls risk perceptions appear to be the key determinant of both schooling decisions.

To summarize, the results of this paper show that how families decide about the education of their children and what are the key determinants of this choice importantly depend on the gender of the child. Furthermore, we provide evidence that not only expected (monetary) returns matter, but also risk perceptions and marriage market considerations. We show how data on subjective expectations help us to shed light on the intra-household decision-making process and on the relevance of people's ex-ante beliefs about returns and risk perceptions in the decision to invest into human capital.

Our results have important policy implications for the design of programs aiming at increasing schooling, such as conditional cash transfer programs, fellowship programs, information campaigns etc. An improved understanding of intra-household decision processes for human capital investments is crucial to determine who should receive the conditional cash or fellowship. Evidence on how informed parents and youths are about potential earnings for different schooling levels is key for understanding, whether information campaigns about possible careers and potential earnings could be an efficient mean to raise schooling and to know who should be informed, the youth and/or the parents. Furthermore, for the effective design of such programs, it is indispensable to understand, whether there are differences in the determinants of schooling choices for boys and girls, and differences in the intra-household decision process depending on the gender of the child.

Our paper adds to the literature on subjective expectations in illustrating that –also in developing countries, at least conditional on a certain level of education– people seem able and willing to respond meaningfully to questions about their perceptions of future earnings and employment and that these data can improve our understanding of important economic decisions, such as investment into human capital.

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Table 1: Individual and Family-Background Characteristics: Junior High School Graduates

| Junior HS Graduates: | **Boys** | | | **Girls** | | |
| Respondent: | **Youth** | **Mother** | **Diff** | **Youth** | **Mother** | **Diff** |
	Mean/(SE)		(P-Val)	Mean/(SE)		(P-Val)
Enrollment Rate: Senior HS	0.792 (0.406)	0.761 (0.427)	(0.120)	0.809 (0.393)	0.827 (0.379)	(0.320)
GPA of Jr HS (Scale 0-100)	79.17 (8.42)	79.70 (8.73)	(0.202)	82.10 (7.46)	82.77 (9.14)	(0.082)
Height	162.13 (8.95)	161.70 (8.36)	(0.300)	153.66 (7.85)	154.60 (8.347)	(0.012)
Ratio Unmarried Men to Women (at Least Jun HS)	1.178 (0.763)	1.041 (0.544)	(0.000)	1.193 (0.758)	1.104 (0.692)	(0.007)
Mother's Educ - Primary	0.703 (0.457)	0.727 (0.446)	(0.350)	0.717 (.451)	0.754 (0.431)	(0.108)
Mother's Educ - Jr HS	0.258 (0.438)	0.239 (0.427)	(0.429)	0.237 (.425)	0.220 (0.415)	(0.465)
Mother's Educ - Sr HS	0.034 (0.182)	0.025 (0.156)	(0.331)	0.039 (.194)	0.017 (0.131)	(0.011)
Mother's Educ - Univ	0.0046 (0.068)	0.0094 (0.096)	(0.313)	0.0074 (.085)	0.0079 (0.089)	(0.902)
Father's Educ - Primary	0.690 (0.463)	0.714 (0.452)	(0.393)	0.702 (0.457)	0.699 (0.459)	(0.908)
Father's Educ - Jr HS	0.240 (0.428)	0.212 (0.409)	(0.266)	0.233 (0.423)	0.228 (0.420)	(0.849)
Father's Educ - Sr HS	0.061 (0.239)	0.065 (0.247)	(0.789)	0.055 (0.228)	0.054 (0.226)	(0.932)
Father's Educ - Univ	0.0089 (0.094)	0.0095 (0.097)	(0.921)	0.0094 (0.097)	0.0187 (0.136)	(0.205)
Per Cap Income - 5 to 10k	0.307 (0.462)	0.286 (0.452)	(0.337)	0.283 (0.451)	0.320 (0.467)	(0.077)
Per Cap Income - above 10k	0.202 (0.402)	0.203 (0.402)	(0.964)	0.231 (0.422)	0.196 (0.398)	(0.064)
Father's Occup - Unsk. Work	0.307 (0.461)	0.385 (0.487)	(0.004)	0.340 (0.474)	0.316 (0.465)	(0.364)
Father's Occup - Employee	0.488 (0.500)	0.361 (0.481)	(0.000)	0.445 (0.497)	0.459 (0.499)	(0.620)
Father's Occup - Employer	0.006 (0.080)	0.007 (0.081)	(0.978)	0.008 (0.090)	0.002 (0.042)	(0.088)
Father's Occup - Self-Empl.	0.178 (0.382)	0.227 (0.419)	(0.031)	0.189 (0.392)	0.207 (0.406)	(0.413)
Father's Occup - Fam. Work	0.021 (0.143)	0.021 (0.144)	(0.960)	0.018 (0.132)	0.016 (0.125)	(0.794)
Observations	901	838		1099	830	

Table 2: Individual and Family-Background Characteristics: Senior High School Graduates

Senior HS Graduates:	**Boys**			**Girls**		
Respondent:	**Youth**	**Mother**	**Diff**	**Youth**	**Mother**	**Diff**
	Mean/(SE)		(P-Val)	Mean/(SE)		(P-Val)
Enrollment Rate: College	0.242 (0.429)	0.326 (0.469)	(0.001)	0.232 (0.422)	0.403 (0.491)	(0.000)
GPA of Jr HS (Scale 0-100)	81.00 (6.71)	81.74 (8.90)	(0.083)	82.87 (7.40)	82.70 (11.84)	(0.743)
Height	165.26 (7.55)	165.23 (7.86)	(0.948)	154.77 (7.32)	156.02 (7.907)	(0.001)
Ratio Unmarried Men to Women (at Least Sen HS)	1.149 (0.674)	1.123 (0.702)	(0.500)	1.129 (0.745)	1.118 (0.759)	(0.766)
Mother's Educ - Primary	0.786 (0.411)	0.800 (0.400)	(0.591)	0.786 (.410)	0.771 (0.421)	(0.538)
Mother's Educ - Jr HS	0.187 (0.391)	0.173 (0.378)	(0.566)	0.175 (.380)	0.191 (0.393)	(0.490)
Mother's Educ - Sr HS	0.020 (0.139)	0.024 (0.152)	(0.678)	0.034 (.180)	0.038 (0.192)	(0.679)
Mother's Educ - Univ	0.0074 (0.086)	0.0036 (0.060)	(0.451)	0.0053 (.073)	0.000 (0.000)	(0.083)
Father's Educ - Primary	0.747 (0.435)	0.763 (0.426)	(0.602)	0.756 (0.430)	0.740 (0.439)	(0.571)
Father's Educ - Jr HS	0.191 (0.394)	0.181 (0.385)	(0.710)	0.184 (0.388)	0.195 (0.396)	(0.683)
Father's Educ - Sr HS	0.050 (0.218)	0.044 (0.205)	(0.674)	0.053 (0.224)	0.048 (0.213)	(0.709)
Father's Educ - Univ	0.012 (0.108)	0.012 (0.111)	(0.927)	0.007 (0.080)	0.017 (0.131)	(0.123)
Per Cap Income - 5 to 10k	0.228 (0.420)	0.261 (0.439)	(0.173)	0.247 (0.431)	0.289 (0.454)	(0.062)
Per Cap Income - above 10k	0.183 (0.387)	0.174 (0.379)	(0.657)	0.165 (0.371)	0.177 (0.382)	(0.064)
Father's Occup - Unsk. Work	0.395 (0.490)	0.464 (0.499)	(0.038)	0.422 (0.494)	0.448 (0.498)	(0.513)
Father's Occup - Employee	0.329 (0.470)	0.257 (0.437)	(0.018)	0.308 (0.462)	0.264 (0.441)	(0.114)
Father's Occup - Employer	0.0051 (0.071)	0.0074 (0.086)	(0.650)	0.0125 (0.111)	.0057 (0.076)	(0.242)
Father's Occup - Self-Empl.	0.232 (0.423)	0.240 (0.428)	(0.775)	0.228 (0.420)	0.249 (0.433)	(0.412)
Father's Occup - Fam. Work	0.038 (0.192)	0.032 (0.175)	(0.591)	0.030 (0.171)	0.033 (0.178)	(0.827)
Observations	392	537		562	522	

Table 3: Subjective Expectations of Future Earnings: Young Cohort

Junior HS Graduates	**Boys**			**Girls**		
Resp:	**Youth**	**Mother**	**Corr Diff**	**Youth**	**Mother**	**Corr Diff**
	Mean/(SE)		(P-Val)	Mean/(SE)		(P-Val)
Exp Log Earnings						
- Junior HS	7.069	7.188	0.153	6.992	7.199	0.399
	(0.602)	(0.490)	(0.096)	(0.587)	(0.482)	(0.000)
- Senior HS	7.626	7.713	-0.011	7.566	7.698	0.250
	(0.534)	(0.437)	(0.897)	(0.553)	(0.447)	(0.007)
- College	8.259	8.330	.094	8.200	8.308	0.207
	(0.507)	(0.433)	(0.249)	(0.522)	(0.446)	(0.024)
Exp Return						
- Senior HS	0.556	0.525	-0.164	0.574	0.499	-0.149
	(0.321)	(0.291)	(0.003)	(0.320)	(0.269)	(0.010)
- College	0.633	0.617	0.104	0.634	0.610	-0.043
	(0.366)	(0.321)	(0.087)	(0.365)	(0.334)	(0.517)
Std Dev of Log Earn						
- Junior HS	0.076	0.071	-0.032	0.076	0.070	-0.022
	(0.048)	(0.044)	(0.000)	(0.047)	(0.044)	(0.010)
- Senior HS	0.066	0.061	-0.009	0.064	0.063	-0.003
	(0.042)	(0.038)	(0.227)	(0.040)	(0.040)	(0.726)
- College	0.054	0.052	-0.012	0.054	0.054	-0.009
	(0.036)	(0.033)	(0.053)	(0.037)	(0.037)	(0.191)
Skewness						
- Junior HS	0.527	0.542	-0.003	0.503	0.537	-0.013
	(0.203)	(0.189)	(0.929)	(0.198)	(0.193)	(0.735)
- Senior HS	0.669	0.667	-0.054	0.645	0.655	-0.014
	(0.177)	(0.165)	(0.078)	(0.187)	(0.177)	(0.687)
- College	0.810	0.811	-0.019	0.798	0.804	0.008
	(0.175)	(0.162)	(0.519)	(0.186)	(0.175)	(0.820)
Prob of Work						
- Junior HS	0.496	0.506	-0.052	0.470	0.507	-0.016
	(0.207)	(0.214)	(0.160)	(0.208)	(0.205)	(0.683)
- Senior HS	0.676	0.667	-0.093	0.655	0.662	-0.062
	(0.179)	(0.170)	(0.003)	(0.190)	(0.168)	(0.075)
- College	0.824	0.820	-0.085	0.822	0.809	-0.049
	(0.166)	(0.151)	(0.003)	(0.169)	(0.161)	(0.126)
Observations	901	838	1739	1099	830	1929

Notes: The "Corrected Difference" between the expectations of mother and youth controls for compositional differences in mother and youth sample and corrects for sample selection by instrumenting for who responds to the expectation questions. As instruments we use variables that capture the timing of the interview.

Table 4: Subjective Expectations of Future Earnings: Old Cohort

Senior HS Graduates:	**Boys**			**Girls**		
Resp:	**Youth**	**Mother**	**Corr Diff**	**Youth**	**Mother**	**Corr Diff**
	Mean/(SE)		(P-Val)	Mean/(SE)		(P-Val)
Exp Log Earnings						
- Senior HS	7.613	7.651	0.022	7.532	7.642	0.263
	(0.495)	(0.434)	(0.856)	(0.500)	(0.423)	(0.021)
- College	8.262	8.318	-0.070	8.236	8.306	0.181
	(0.477)	(0.448)	(0.577)	(0.486)	(0.438)	(0.116)
Exp Return						
- College	0.649	0.667	-0.092	0.704	0.664	-0.081
	(0.357)	(0.361)	(0.364)	(0.407)	(0.358)	(0.394)
Std Dev of Log Earn						
- Senior HS	0.065	0.059	-0.003	0.063	0.061	0.009
	(0.040)	(0.036)	(0.802)	(0.038)	(0.038)	(0.343)
- College	0.054	0.053	0.004	0.053	0.051	0.003
	(0.032)	(0.033)	(0.697)	(0.034)	(0.031)	(0.733)
Skewness						
- Senior HS	0.643	0.649	-0.079	0.650	0.657	0.067
	(0.187)	(0.182)	(0.133)	(0.183)	(0.175)	(0.140)
- College	0.778	0.793	-0.050	0.793	0.803	0.056
	(0.182)	(0.172)	(0.321)	(0.182)	(0.172)	(0.213)
Prob of Work						
- Senior HS	0.667	0.652	-0.066	0.668	0.648	-0.045
	(0.175)	(0.182)	(0.187)	(0.187)	(0.181)	(0.322)
- College	0.819	0.813	0.010	0.827	0.816	-0.025
	(0.161)	(0.155)	(0.814)	(0.161)	(0.154)	(0.530)
Observations	578	736	1314	807	727	1534

Notes: The "Corrected Difference" between the expectations of mother and youth controls for compositional differences in mother and youth sample and corrects for sample selection by instrumenting for who responds to the expectation questions. As instruments we use variables that capture the timing of the interview.

Table 5: Expected Earnings of Mothers and Youths, Mothers' Point Expectations and Census Earnings (With Heckman Selection Correction)

	Boys				Girls			
Respondent:	Youth		Mother		Youth		Mother	
	Mean (SE)	Implied Return	Mean (SE)	Implied Return	Mean (SE)	Implied Return	Mean (SE)	Implied Return
Young Cohort								
Exp Log Earnings (from Distr)								
- Junior HS	7.058 (0.071)		7.017 (0.061)		6.852 (0.065)		7.057 (0.071)	
- Senior HS	7.688 (0.063)	0.631 (0.038)	7.517 (0.056)	0.500 (0.035)	7.505 (0.061)	0.652 (0.036)	7.560 (0.066)	0.504 (0.039)
- College	8.284 (0.060)	0.595 (0.043)	8.192 (0.054)	0.675 (0.039)	8.105 (0.058)	0.600 (0.040)	8.109 (0.067)	0.548 (0.049)
Mother's Point Expect (Logs)								
- Junior HS	7.375 (0.063)		7.437 (0.058)		7.409 (0.058)		7.481 (0.070)	
- Senior HS	7.741 (0.058)	0.366 (0.035)	7.801 (0.056)	0.364 (0.028)	7.808 (0.057)	0.399 (0.035)	7.835 (0.068)	0.354 (0.036)
- College	8.308 (0.060)	0.567 (0.045)	8.160 (0.059)	0.359 (0.045)	8.316 (0.057)	0.509 (0.045)	8.223 (0.066)	0.388 (0.046)
Log Census Earnings (Resid Municip)								
- Junior HS	7.631 (0.040)		7.317 (0.044)		7.101 (0.050)		6.819 (0.082)	
- Senior HS	7.883 (0.031)	0.272 (0.034)	7.705 (0.037)	0.317 (0.041)	7.735 (0.041)	0.498 (0.044)	6.993 (0.080)	0.226 (0.063)
- College	8.197 (0.038)	0.336 (0.040)	8.127 (0.043)	0.412 (0.048)	8.091 (0.026)	0.514 (0.044)	7.963 (0.039)	0.931 (0.084)
Observations	901	901	838	838	1099	1099	830	830
Old Cohort								
Exp Log Earnings (from Distr)								
- Senior HS	7.732 (0.110)		7.730 (0.080)		7.389 (0.079)		7.486 (0.088)	
- College	8.452 (0.108)	0.720 (0.079)	8.328 (0.082)	0.598 (0.067)	8.186 (0.075)	0.797 (0.063)	8.168 (0.091)	0.682 (0.073)
Mother's Point Expect (Logs)								
- Senior HS	7.800 (0.109)		7.854 (0.086)		7.651 (0.078)		8.080 (0.108)	
- College	8.288 (0.117)	0.488 (0.090)	8.269 (0.084)	0.415 (0.066)	8.174 (0.080)	0.524 (0.058)	8.173 (0.102)	0.094 (0.102)
Log Census Earnings (Resid Municip)								
- Senior HS	7.778 (0.071)		7.549 (0.071)		7.627 (0.059)		6.840 (0.148)	
- College	8.169 (0.069)	0.434 (0.092)	8.299 (0.070)	0.671 (0.105)	8.104 (0.043)	0.590 (0.071)	7.937 (0.087)	1.164 (0.159)
Observations	901	901	838	838	1099	1099	830	830

Table 6: Expected Earnings and Observed Characteristics - Boys of Young Cohort

| Dep Var: | **Expected Log Earnings of Boys** | | | | | |
| | Youth Respondent | | | Mother Respondent | | |
	Jr HS	**Sr HS**	**College**	**Jr HS**	**Sr HS**	**College**
Log Census Earn (Resid Municip) - Jr HS	0.170**	0.184***	0.227***	0.060	0.043	0.181***
	(0.075)	(0.067)	(0.065)	(0.066)	(0.058)	(0.058)
Log Census Earn (Resid Municip) - Sr HS	0.208**	0.189**	0.054	-0.054	-0.070	-0.119*
	(0.101)	(0.091)	(0.088)	(0.072)	(0.063)	(0.063)
Log Census Earn (Resid Municip) - Coll HS	-0.129	-0.134*	0.050	0.030	0.009	0.048
	(0.081)	(0.073)	(0.070)	(0.059)	(0.052)	(0.052)
Ratio Unmarried Men to Women (At Least Jun HS)	0.004	0.006	0.025	0.002	-0.010	-0.013
	(0.032)	(0.029)	(0.028)	(0.036)	(0.032)	(0.032)
Single	-0.105	-0.106	0.096	-0.038	-0.024	-0.440**
	(0.196)	(0.177)	(0.170)	(0.202)	(0.178)	(0.178)
Underweight	0.001	-0.004	-0.049	-0.025	-0.074*	-0.095**
	(0.053)	(0.048)	(0.046)	(0.048)	(0.042)	(0.042)
Obese	-0.016	0.050	0.033	-0.217	-0.298**	-0.203*
	(0.135)	(0.121)	(0.117)	(0.140)	(0.124)	(0.123)
GPA of Junior HS (0-100)	-0.000	0.002	0.000	0.004**	0.003	0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Mother's Educ - Sr HS	-0.155	-0.102	0.017	0.247*	0.082	-0.034
	(0.134)	(0.117)	(0.114)	(0.131)	(0.117)	(0.115)
Per cap Income - 5 to 10k	-0.051	-0.015	0.012	0.056	0.078**	0.069**
	(0.047)	(0.041)	(0.040)	(0.040)	(0.036)	(0.035)
Per cap Income - more than 10k	0.000	-0.009	0.017	0.014	0.032	0.070*
	(0.056)	(0.049)	(0.048)	(0.046)	(0.041)	(0.040)
Father's Occup - Employee	0.004	0.011	-0.025	0.121**	0.083*	0.072*
	(0.053)	(0.046)	(0.045)	(0.048)	(0.043)	(0.042)
Father's Occup - Employer	-0.191	0.049	0.275	0.340	0.624***	0.467**
	(0.287)	(0.252)	(0.246)	(0.232)	(0.207)	(0.203)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1691	1691	1691	1672	1672	1672
Cens. obs.	838	838	838	901	901	901
Chi-Square	144.520	152.836	115.396	113.281	139.059	115.772
Inverse Mills Ratio	0.244	0.083	0.159	0.082	0.145	0.006
S.E. of Inv Mills	0.087	0.077	0.075	0.081	0.073	0.071

Notes: Table displays coefficients and standard errors in brackets. * $p<0.1$ ** $p<0.05$ *** $p<0.01$. Excl. categories: not single, body mass index in normal range, father's and mother's education primary or less, lowest per capita parental income category, father's occupation unskilled worker.

Table 7: Expected Earnings and Observed Characteristics - Girls of Young Cohort

Dep Var:	**Expected Log Earnings of Girls**					
	Youth Respondent			Mother Respondent		
	Jr HS	**Sr HS**	**College**	**Jr HS**	**Sr HS**	**College**
Log Census Earn (Resid Municip) - Jr HS	0.032	-0.005	0.067	0.069	0.064	0.062
	(0.058)	(0.056)	(0.055)	(0.051)	(0.046)	(0.048)
Log Census Earn (Resid Municip) - Sr HS	0.108	0.119	0.093	-0.111*	-0.114**	-0.056
	(0.077)	(0.073)	(0.072)	(0.058)	(0.053)	(0.055)
Log Census Earn (Resid Municip) - Coll HS	0.043	0.121	0.190**	-0.134*	-0.095	0.136*
	(0.096)	(0.092)	(0.090)	(0.075)	(0.068)	(0.071)
Ratio Unmarried Men to Women (At Least Jun HS)	-0.044	-0.041	-0.002	-0.041	-0.093***	-0.049
	(0.048)	(0.046)	(0.045)	(0.039)	(0.035)	(0.037)
Height	0.006**	0.004*	0.002	0.004**	0.003*	0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Underweight	-0.088*	-0.063	-0.039	-0.078	-0.116**	-0.086*
	(0.052)	(0.049)	(0.049)	(0.051)	(0.046)	(0.048)
Obese	-0.111	-0.147	-0.216*	-0.025	0.028	-0.120
	(0.125)	(0.120)	(0.117)	(0.094)	(0.085)	(0.089)
GPA of Junior HS (0-100)	0.001	0.000	0.001	0.002	0.003*	0.004**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Mother's Educ - Jr HS	-0.107**	-0.041	-0.037	-0.056	-0.060	-0.004
	(0.051)	(0.048)	(0.048)	(0.046)	(0.042)	(0.045)
Mother's Educ - Univ	0.106	0.184	0.053	-0.487**	-0.355*	-0.173
	(0.241)	(0.226)	(0.224)	(0.201)	(0.182)	(0.196)
Father's Educ - Jr HS	0.044	0.036	0.040	0.104**	0.069	0.020
	(0.059)	(0.055)	(0.055)	(0.050)	(0.046)	(0.049)
Father's Educ - Univ	-0.040	-0.006	0.175	0.353**	0.185	0.229
	(0.240)	(0.225)	(0.223)	(0.168)	(0.152)	(0.164)
Per cap Income - 5 to 10k	0.037	0.069	0.074*	0.018	0.018	0.093**
	(0.047)	(0.044)	(0.044)	(0.041)	(0.037)	(0.040)
Per cap Income - more than 10k	0.108**	0.091*	0.149***	0.027	0.005	0.030
	(0.052)	(0.049)	(0.048)	(0.045)	(0.041)	(0.044)
Father's Occup - Employer	-0.057	-0.345	-0.599***	-0.228	-0.327	0.184
	(0.248)	(0.229)	(0.229)	(0.436)	(0.395)	(0.418)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1739	1739	1739	1805	1805	1805
Cens. obs.	830	830	830	1099	1099	1099
Chi-Square	117.900	121.640	95.834	153.813	157.612	110.906
Inverse Mills Ratio	0.352	0.267	0.301	0.096	0.085	0.195
S.E. of Inv Mills	0.101	0.095	0.094	0.084	0.076	0.081

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: not single, body mass index in normal range, father's and mother's education primary or less, lowest per capita parental income category, father's occupation unskilled worker.

Table 8: Expected Earnings and Observed Characteristics - Boys of Old Cohort

| Dep Var: | Expected Log Earnings of Boys | | | |
| | Youth Respondent | | Mother Respondent | |
	Sr HS	College	Sr HS	College
Log Census Earn (Resid Municip) - Jr HS	0.061	0.107	0.014	-0.025
	(0.081)	(0.081)	(0.063)	(0.065)
Log Census Earn (Resid Municip) - Sr HS	0.007	0.021	0.043	0.048
	(0.076)	(0.076)	(0.057)	(0.059)
Log Census Earn (Resid Municip) - Coll HS	0.066	0.097	0.199***	0.293***
	(0.066)	(0.066)	(0.052)	(0.054)
Ratio Unmarried Men to Women (At Least Sen HS)	0.063*	0.012	0.037	0.020
	(0.033)	(0.033)	(0.027)	(0.028)
Single	-0.218**	-0.076	-0.276**	-0.309**
	(0.111)	(0.111)	(0.124)	(0.129)
Height	-0.002	-0.002	0.003	0.008***
	(0.003)	(0.003)	(0.002)	(0.002)
Underweight	-0.032	0.047	-0.054	-0.143**
	(0.068)	(0.068)	(0.061)	(0.064)
Obese	-0.010	-0.136	0.265**	0.338***
	(0.144)	(0.143)	(0.119)	(0.124)
Mother's Educ - Sr HS	-0.130	-0.165	0.166	0.251**
	(0.182)	(0.181)	(0.123)	(0.126)
Father's Educ - Sr HS	0.139	0.152	-0.183*	-0.015
	(0.111)	(0.111)	(0.101)	(0.104)
Father's Educ - Univ	0.415*	0.374	-0.301*	-0.133
	(0.229)	(0.229)	(0.183)	(0.188)
Father's Occup - Employer	0.011	-0.253	0.073	0.399*
	(0.311)	(0.310)	(0.217)	(0.222)
Father's Occup - Self-Empl.	0.112*	0.166***	-0.052	-0.029
	(0.062)	(0.062)	(0.054)	(0.055)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1269	1269	1221	1221
Cens. obs.	736	736	578	578
Chi-Square	131.224	123.783	75.993	79.453
Inverse Mills Ratio	-0.043	-0.056	-0.125	-0.006
S.E. of Inv Mills	0.109	0.109	0.115	0.119

Notes: Table displays coefficients and standard errors in brackets. * $p<0.1$ ** $p<0.05$ *** $p<0.01$. Excl. categories: not single, body mass index in normal range, father's and mother's education primary or less, lowest per capita parental income category, father's occupation unskilled worker.

Table 9: Expected Earnings and Observed Characteristics - Girls of Old Cohort

Dep Var:	**Expected Log Earnings of Girls**			
	Youth Respondent		Mother Respondent	
	Sr HS	**College**	**Sr HS**	**College**
Log Census Earn (Resid Municip) - Jr HS	0.063	0.088**	0.121***	0.118**
	(0.044)	(0.044)	(0.047)	(0.052)
Log Census Earn (Resid Municip) - Sr HS	0.075	-0.013	-0.054	-0.021
	(0.061)	(0.061)	(0.054)	(0.059)
Log Census Earn (Resid Municip) - Coll HS	-0.148**	-0.026	-0.179***	-0.076
	(0.072)	(0.072)	(0.064)	(0.071)
Ratio Unmarried Men to Women (At Least Sen HS)	-0.063	-0.019	-0.043	-0.031
	(0.044)	(0.044)	(0.042)	(0.047)
Overweight	-0.108*	-0.134**	0.048	0.002
	(0.059)	(0.059)	(0.051)	(0.056)
GPA of Junior HS (0-100)	0.001	0.005*	0.003*	0.004**
	(0.003)	(0.003)	(0.002)	(0.002)
Mother's Educ - Jr HS	-0.060	-0.020	-0.134***	-0.095*
	(0.059)	(0.058)	(0.048)	(0.053)
Father's Educ - Sr HS	0.117	0.152	0.191*	0.070
	(0.113)	(0.110)	(0.103)	(0.114)
Father's Educ - Univ	-0.311	-0.367	0.487***	0.357**
	(0.339)	(0.337)	(0.159)	(0.175)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1360	1360	1351	1351
Cens. obs.	727	727	807	807
Chi-Square	87.558	89.357	93.644	42.256
Inverse Mills Ratio	0.240	0.136	0.051	0.011
S.E. of Inv Mills	0.090	0.087	0.134	0.148

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: not single, body mass index in normal range, father's and mother's education primary or less, lowest per capita parental income category, father's occupation unskilled worker.

Table 10: High School Attendance Choice of Male and Female Teens: Youths' versus Mothers' Expectations of Earnings

Dependent Variable	High School Attendance Decision			
	Boys		Girls	
Exp Log Earn - Jr HS	0.156 (0.201)	0.336 (0.214)	-0.150 (0.194)	-0.145 (0.200)
Exp Log Earn - Sr HS	-0.077 (0.270)	-0.196 (0.281)	-0.292 (0.255)	-0.306 (0.259)
Exp Log Earn - Coll	0.255 (0.195)	0.208 (0.200)	0.242 (0.188)	0.285 (0.193)
Mother's Point Exp (Logs) - Jr HS	-0.272 (0.207)	-0.290 (0.209)	0.010 (0.208)	0.014 (0.210)
Mother's Point Exp (Logs) - Sr HS	-0.094 (0.261)	-0.114 (0.264)	0.006 (0.244)	0.033 (0.247)
Mother's Point Exp (Logs) - College	0.449** (0.179)	0.445** (0.182)	0.042 (0.166)	0.010 (0.166)
Prob of Work - Jr HS		-0.052 (0.390)		-0.074 (0.337)
Prob of Work - Sr HS		0.004 (0.517)		0.000 (0.453)
Prob of Work - College		0.714* (0.432)		-0.021 (0.457)
Var of Log Earn - Jr HS		9.498 (6.739)		8.072 (7.860)
Var of Log Earn - Sr HS		13.781 (9.603)		-12.455 (8.278)
Var of Log Earn - College		-0.944 (11.330)		9.840 (11.492)
Ratio Unmarried Men to Women (At Least Jun HS)	-0.127 (0.101)	-0.152 (0.103)	-0.249* (0.149)	-0.257* (0.155)
Locality Size 15 to 50k	0.192 (0.193)	0.170 (0.196)	-0.273 (0.187)	-0.242 (0.188)
Locality Size more than 50k	-0.111 (0.184)	-0.142 (0.187)	-0.464** (0.212)	-0.452** (0.211)
Fraction of At Least Jun HS Educ Men	0.163 (0.513)	0.206 (0.520)		
Fraction of At Least Jun HS Educ Women			0.782 (0.556)	0.737 (0.553)
Single	0.892 (0.691)	0.954 (0.686)	0.949*** (0.350)	0.964*** (0.349)
GPA of Junior HS (0-100)	0.033*** (0.008)	0.036*** (0.008)	0.030*** (0.008)	0.029*** (0.008)
Mother's Educ - Jr HS	0.372** (0.179)	0.369** (0.181)	0.441** (0.181)	0.440** (0.181)
Father not in Household	-0.120 (0.176)	-0.097 (0.182)	0.273 (0.170)	0.274 (0.170)
Per cap Income - more than 10k	0.140 (0.180)	0.124 (0.183)	0.028 (0.170)	0.039 (0.168)
Father's Occup - Self-Empl.	0.284 (0.235)	0.308 (0.242)	0.427* (0.225)	0.458** (0.224)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1173	1173	1345	1345
Censored Obs	492	492	531	531
Log Likelihood	-979.915	-974.459	-1119.524	-1119.719
Sample Sel: Corr of Errors (P-Val)	-0.174 (0.730)	-0.138 (0.793)	-0.119 (0.799)	-0.210 (0.687)

Notes: Table displays coefficients and standard errors in brackets. * $p<0.1$ ** $p<0.05$ *** $p<0.01$. Excl. categories: locality size less than 15.000, not single, mother's and father's education primary or less, father in household, per capita income less than 5000 pesos, father's occupation unskilled worker. All specifications include state FE.

Table 11: High School Attendance Decision of Male and Female Teens: Mothers' and Youths' Expected Earnings and Perceived Employment and Earnings Risk

Dependent Variable	High School Attendance Decision			
	Boys		Girls	
	Mother	Youth	Mother	Youth
Exp Log Earn - Jr HS	-0.213	0.270	-0.031	-0.137
	(0.188)	(0.209)	(0.288)	(0.198)
Exp Log Earn - Sr HS	0.292	-0.235	0.030	-0.295
	(0.274)	(0.274)	(0.366)	(0.258)
Exp Log Earn - Coll	-0.092	0.345*	-0.286	0.288
	(0.187)	(0.191)	(0.250)	(0.192)
Prob of Work - Jr HS	0.197	-0.084	-0.630	-0.070
	(0.350)	(0.383)	(0.468)	(0.335)
Prob of Work - Sr HS	-0.341	0.117	-0.254	-0.015
	(0.514)	(0.507)	(0.635)	(0.450)
Prob of Work - College	0.677*	0.710*	1.068*	-0.004
	(0.398)	(0.424)	(0.594)	(0.454)
Var of Log Earn - Jr HS	4.634	9.889	-8.955	8.288
	(5.957)	(6.907)	(8.140)	(7.835)
Var of Log Earn - Sr HS	-4.187	12.490	-16.407*	-12.239
	(8.583)	(9.517)	(9.379)	(8.247)
Var of Log Earn - College	-2.356	1.875	9.715	9.717
	(9.491)	(11.152)	(10.191)	(11.444)
Ratio Unmarried Men to Women	-0.156	-0.140	0.105	-0.255*
(At Least Jun HS)	(0.121)	(0.102)	(0.133)	(0.151)
Locality Size 15 to 50k	0.025	0.193	-0.258	-0.245
	(0.169)	(0.193)	(0.229)	(0.188)
Locality Size more than 50k	-0.274	-0.096	-0.272	-0.458**
	(0.181)	(0.182)	(0.289)	(0.211)
Fraction of At Least Jun HS Educ Men	0.859	0.158		
	(0.643)	(0.508)		
Fraction of At Least Jun HS Educ Women			2.223***	0.758
			(0.750)	(0.550)
Single	0.769	1.541**	6.890	0.964***
	(0.708)	(0.757)	(2087.352)	(0.350)
GPA of Junior HS (0-100)	0.023***	0.035***	0.034***	0.029***
	(0.008)	(0.008)	(0.008)	(0.008)
Mother's Educ - Jr HS	0.210	0.453**	0.468**	0.439**
	(0.176)	(0.182)	(0.232)	(0.180)
Mother not in Household	-0.510**	0.094	0.333	-0.244
	(0.248)	(0.242)	(0.270)	(0.197)
Per cap Income - more than 10k	0.116	0.105	0.426*	0.038
	(0.179)	(0.179)	(0.237)	(0.168)
Father's Occup - Self-Empl.	0.007	0.250	0.201	0.462**
	(0.211)	(0.238)	(0.280)	(0.224)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1168	1168	1345	1345
Censored Obs	678	490	814	531
Log Likelihood	-909.626	-971.677	-1008.997	-1119.805
Sample Sel: Corr of Errors (P-Val)	0.852 (0.055)	-0.283 (0.539)	0.328 (0.461)	-0.215 (0.682)

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: locality size less than 15.000, not single, mother's and father's education primary or less, father in household, per capita income less than 5000 pesos, father's occupation unskilled worker. All specifications include state FE.

Table 12: College Attendance Decision of Male and Female Teens: Youths' versus Mothers' Expectations of Earnings

Dependent Variable	College Attendance Decision			
	Boys		Girls	
Exp Log Earn - Sr HS	-0.276**	-0.334*	-0.090	-0.112
	(0.139)	(0.195)	(0.141)	(0.140)
Exp Log Earn - Coll	0.260*	0.285	0.122	0.133
	(0.136)	(0.184)	(0.144)	(0.146)
Mother's Point Exp (Logs) - Sr HS	-0.181	-0.196	0.081	0.080
	(0.127)	(0.177)	(0.148)	(0.147)
Mother's Point Exp (Logs) - College	0.220	0.251	-0.078	-0.084
	(0.137)	(0.194)	(0.145)	(0.144)
Prob of Work - Sr HS		-0.351		0.277
		(0.397)		(0.331)
Prob of Work - College		0.080		-0.005
		(0.396)		(0.389)
Var of Log Earn - Sr HS		-1.545		-7.244
		(7.655)		(7.222)
Var of Log Earn - College		-9.255		7.330
		(11.003)		(8.115)
Ratio Unmarried Men to Women (At Least Sen HS)	0.087	0.094	-0.087	-0.082
	(0.061)	(0.063)	(0.118)	(0.116)
Fraction of Men with Some College	2.322**	2.812*		
	(1.179)	(1.566)		
Fraction of Women with Some College			0.542	0.286
			(1.330)	(1.332)
Single	0.064	0.076	0.941**	0.947**
	(0.332)	(0.357)	(0.377)	(0.373)
GPA of Junior HS (0-100)	0.027***	0.029*	0.023***	0.021***
	(0.007)	(0.016)	(0.007)	(0.007)
Mother's Educ - Sr HS	0.196	0.277	0.567*	0.530*
	(0.401)	(0.420)	(0.310)	(0.311)
Father's Educ - Jr HS	0.124	0.116	0.371**	0.384**
	(0.161)	(0.170)	(0.158)	(0.159)
Father's Educ - Sr HS	0.517**	0.556*	0.296	0.414
	(0.262)	(0.327)	(0.294)	(0.284)
Father not in Household	0.359***	0.358**	0.035	0.042
	(0.134)	(0.141)	(0.143)	(0.141)
Per cap Income - 5 to 10k	0.013	-0.001	0.255**	0.236*
	(0.123)	(0.132)	(0.125)	(0.124)
Per cap Income - more than 10k	0.257*	0.264*	0.513***	0.499***
	(0.135)	(0.149)	(0.142)	(0.140)
Father's Occup - Employee	0.229*	0.247*	0.032	0.018
	(0.139)	(0.148)	(0.146)	(0.142)
Distance to Univ 20 to 40km	-0.133*	-0.135*	-0.254*	-0.248*
	(0.078)	(0.079)	(0.137)	(0.136)
Distance to Univ more than 40km	-0.114	-0.060	-0.402**	-0.398**
	(0.169)	(0.206)	(0.175)	(0.171)
Tuition more than 750 pesos	-0.105	-0.083	-0.667***	-0.683***
	(0.156)	(0.169)	(0.167)	(0.167)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1393	1404	1636	1636
Censored Obs	777	784	777	777
Log Likelihood	-1183.192	-1188.676	-1462.729	-1475.767
Sample Sel: Corr of Errors (P-Val)	0.989 (0.069)	0.831 (0.169)	-0.366 (0.294)	-0.387 (0.220)

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: not single, mother's and father's education primary or less, father in household, per capita income less than 5000 pesos, father's occupation unskilled worker. All specifications include state FE.

Table 13: College Attendance Decision of Male and Female Teens: Youths' versus Mothers' Expected Earnings and Perceived Risk

Dependent Variable	**College Attendance Decision**			
	Boys		Girls	
	Mother	Youth	Mother	Youth
Exp Log Earn - Sr HS	0.089	-0.334*	-0.044	-0.097
	(0.159)	(0.195)	(0.143)	(0.134)
Exp Log Earn - Coll	0.153	0.285	0.255*	0.110
	(0.166)	(0.184)	(0.143)	(0.140)
Prob of Work - Sr HS	-0.456	-0.351	0.021	0.278
	(0.346)	(0.397)	(0.304)	(0.330)
Prob of Work - College	0.220	0.080	0.699*	-0.016
	(0.410)	(0.396)	(0.371)	(0.388)
Var of Log Earn - Sr HS	10.202	-1.545	3.701	-7.618
	(8.463)	(7.655)	(7.068)	(7.172)
Var of Log Earn - College	-12.411	-9.255	10.004	7.152
	(9.467)	(11.003)	(9.887)	(8.099)
Ratio Unmarried Men to Women	0.030	0.094	0.054	-0.083
(At Least Sen HS)	(0.067)	(0.063)	(0.093)	(0.116)
Fraction of Men with Some College	-1.292	2.812*		
	(1.057)	(1.566)		
Fraction of Women with Some College			-2.619**	0.241
			(1.191)	(1.325)
Single	0.469	0.076	1.452**	0.954**
	(0.412)	(0.357)	(0.602)	(0.373)
GPA of Junior HS (0-100)	0.014**	0.029*	0.004	0.021***
	(0.007)	(0.016)	(0.004)	(0.007)
Mother's Educ - Jr HS	0.340**	0.172	0.399***	0.054
	(0.151)	(0.181)	(0.135)	(0.152)
Mother's Educ - Sr HS	0.920**	0.277	0.662**	0.526*
	(0.403)	(0.420)	(0.269)	(0.310)
Father's Educ - Jr HS	0.254	0.116	0.007	0.386**
	(0.154)	(0.170)	(0.146)	(0.159)
Father's Educ - Sr HS	0.132	0.556*	0.423	0.410
	(0.293)	(0.327)	(0.276)	(0.283)
Father not in Household	0.181	0.358**	0.048	0.042
	(0.144)	(0.141)	(0.126)	(0.141)
Per cap Income - 5 to 10k	-0.021	-0.001	0.266**	0.238*
	(0.120)	(0.132)	(0.111)	(0.124)
Per cap Income - more than 10k	0.340**	0.264*	0.664***	0.497***
	(0.138)	(0.149)	(0.153)	(0.140)
Father's Occup - Employee	-0.109	0.247*	0.147	0.013
	(0.157)	(0.148)	(0.147)	(0.141)
Distance to Univ 20 to 40km	-0.097	-0.135*	0.010	-0.246*
	(0.135)	(0.079)	(0.120)	(0.135)
Distance to Univ more than 40km	-0.004	-0.060	0.035	-0.400**
	(0.158)	(0.206)	(0.148)	(0.170)
Tuition more than 750 pesos	-0.061	-0.083	-0.199	-0.683***
	(0.162)	(0.169)	(0.163)	(0.167)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1404	1404	1636	1636
Censored Obs	620	784	859	777
Log Likelihood	-1349.496	-1188.676	-1525.944	-1475.958
Sample Sel: Corr of Errors (P-Val)	-0.413 (0.279)	0.831 (0.169)	0.573 (0.120)	-0.394 (0.213)

Notes: Table displays marginal effects and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: not single, mother's and father's education primary or less, father in household, per capita income less than 5000 pesos, father's occupation unskilled worker. All specifications include state FE.

Appendix B: Robustness Checks

Figure 1: Comparing Expectations of High School Graduates with a One-Year Younger Cohort
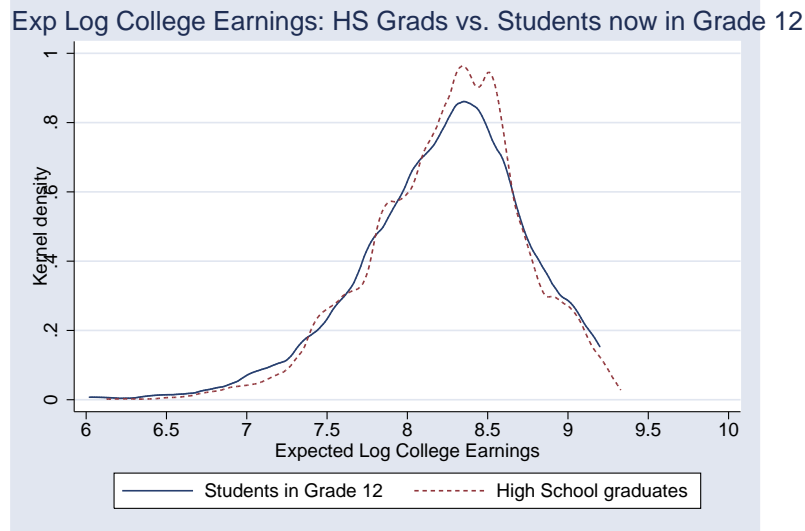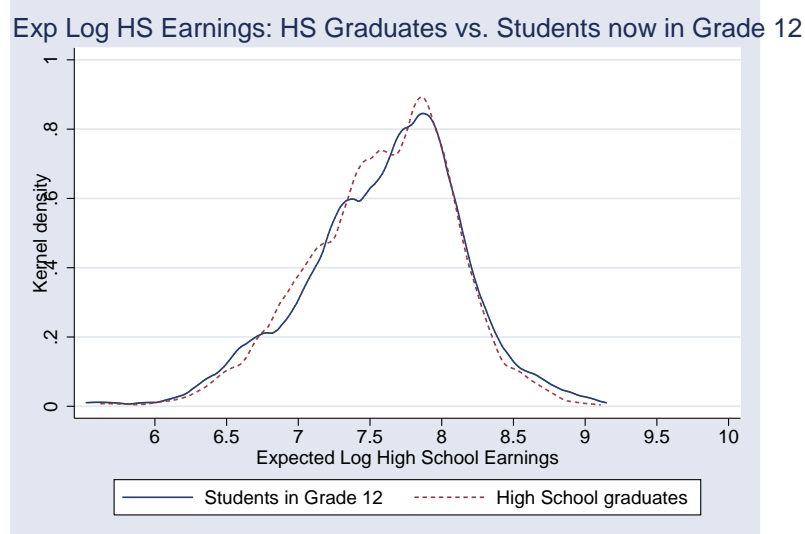

Figure 2: Comparing Expectations of High School Graduates with a One-Year Younger Cohort

Construction of Income and Wealth Measures

The Jovenes survey provides detailed information on income of each household member, savings if existent (only a very selective and richer group of households saves or borrows –4% of households have savings, while 5% borrow), durables and remittances. We create the following two measures: per capita parental income and an index of parental income and wealth. Per capita parental income includes parents' labor earnings, other income sources such as rent, profits from a business, pension income etc and remittances, divided by family size. Median yearly per capita income is 6066 pesos (approximately 606 US$). The index of parental income and wealth is created by a principle component analysis of per capita income, value of durable goods and savings.

We add the income and wealth measures in the form of dummies to allow –in a flexible way– for nonlinear effects of income and wealth on the ability to borrow. We create the dummies using absolute thresholds for parental income, because for the question of credit constraints absolute poverty in interaction with direct costs of schooling matters. In terms of the score of parental income and wealth without natural unit, we use quartiles (computed separately for each of the four groups). The reason for the chosen income thresholds is their approximate correspondence with eligibility requirements for receiving fellowships.[14]. We use per capita income thresholds that are approximately equivalent to two times the minimum wage (about 5,000 pesos per capita income yearly), which is one of the eligibility criteria for receiving fellowships, and equivalent to four times the minimum wage (around 10,000 pesos per capita income), which captures individuals that are still eligible but not primary beneficiaries, while individuals with income of more than four times the minimum wage are not eligible. Around 50% of youths in our sample fall into the first category of less than 5,000 pesos yearly, while about 28% are in the second category and the remaining 20% are in the highest income category of more than 10,000 pesos of yearly per capita income.

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[14]It is important to keep in mind that fellowships in particular for higher education are quantitatively not very important: only 5% of the undergraduate student population received a fellowship in 2004 (for further details, see Kaufmann (2009))

Table 14: First-stage Regression for Whether the Youth Responds Herself: Young Cohort

Dep Var:	Youth Respondent: Yes/No			
	Boys		Girls	
	Marg Eff/(SE)		Marg Eff/(SE)	
Interview Sunday	0.166**	0.140*	0.013	0.030
	(0.079)	(0.085)	(0.097)	(0.096)
Interview Thursday	-0.032	-0.064	-0.094*	-0.102*
	(0.054)	(0.056)	(0.053)	(0.055)
Interview Sunday*Aftern.	-0.063	-0.046	0.239**	0.168
	(0.124)	(0.130)	(0.096)	(0.115)
Interview Sunday*Even.	-0.029	0.002	0.293*	0.305**
	(0.330)	(0.368)	(0.161)	(0.146)
Interview Wednesday*Even.	0.195*	0.159	0.126	0.121
	(0.106)	(0.113)	(0.113)	(0.119)
Interview Thursday*Even.	0.141	0.167	0.214**	0.240***
	(0.108)	(0.110)	(0.095)	(0.091)
Interview Friday*Even.	0.147	0.272***	-0.156	-0.196
	(0.120)	(0.101)	(0.143)	(0.146)
Interview Saturday*Even.	0.254*	0.278**	0.088	0.034
	(0.134)	(0.132)	(0.149)	(0.161)
Interview Week 40	0.083	0.124	0.111	0.157**
	(0.092)	(0.093)	(0.079)	(0.075)
Interview Week 41	0.177***	0.211***	0.182***	0.209***
	(0.037)	(0.038)	(0.033)	(0.034)
Interview Week 42	0.158***	0.180***	0.124***	0.123***
	(0.034)	(0.035)	(0.032)	(0.033)
Interview Week 45	-0.152***	-0.166***	-0.148***	-0.141***
	(0.039)	(0.041)	(0.038)	(0.040)
Interview Week 46	-0.358***	-0.321***	-0.214***	-0.203***
	(0.051)	(0.059)	(0.058)	(0.062)
Ratio Unmarried Men to Women (At Least Jun HS)		0.079***		0.029*
		(0.021)		(0.017)
Single		-0.178		-0.192**
		(0.128)		(0.090)
Height		0.000		-0.005***
		(0.002)		(0.002)
Overweight		-0.081*		-0.054
		(0.044)		(0.040)
Obese		0.274***		-0.105
		(0.074)		(0.078)
GPA of Junior HS (0-100)		-0.003*		-0.002
		(0.001)		(0.001)
Mother's Educ - Sr HS		0.071		0.200***
		(0.092)		(0.070)
Father's Educ - Univ		-0.083		-0.251**
		(0.186)		(0.127)
Per cap Income - more than 10k		0.037		0.076**
		(0.036)		(0.032)
Father's Occup - Employee		0.057*		-0.020
		(0.031)		(0.029)
Father's Occup - Self-Empl.		-0.100***		-0.044
		(0.038)		(0.037)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1738	1738	1929	1929
Log likelihood	-1131.790	-1048.461	-1253.943	-1189.864
P-value	0.000	0.000	0.000	0.000

Notes: Table displays marginal effects and standard errors in brackets. * $p<0.1$ ** $p<0.05$ *** $p<0.01$. Excl. categories: Interview on Monday, interview in the morning, interview in week 43, not single, BMI in normal range, mother's and father's education primary or less, per capita income less than 5000 pesos, father's occupation unskilled worker.

Table 15: First-stage Regression for Whether the Youth Responds Herself: Old Cohort

Dep Var:	Youth Respondent: Yes/No			
	Boys		Girls	
	Marg Eff/(SE)		Marg Eff/(SE)	
Interview Wednesday	0.053	0.039	-0.100*	-0.122**
	(0.063)	(0.066)	(0.058)	(0.060)
Interview Thursday*Aftern.	0.113*	0.076	0.041	-0.002
	(0.066)	(0.068)	(0.064)	(0.067)
Interview Friday*Aftern.	0.048	0.024	0.109*	0.089
	(0.073)	(0.076)	(0.066)	(0.070)
Interview Saturday*Aftern.	0.181**	0.166*	0.070	0.050
	(0.088)	(0.092)	(0.077)	(0.080)
Interview Sunday*Even.	-0.354***	-0.331***	0.218	0.181
	(0.106)	(0.123)	(0.223)	(0.239)
Interview Tuesday*Even.	0.317***	0.304**	-0.064	-0.036
	(0.118)	(0.124)	(0.147)	(0.155)
Interview Saturday*Even.	0.074	0.077	0.382***	0.411***
	(0.203)	(0.208)	(0.076)	(0.059)
Interview Week 40	0.208**	0.216**	0.067	0.064
	(0.106)	(0.107)	(0.085)	(0.086)
Interview Week 41	0.109**	0.170***	0.137***	0.171***
	(0.051)	(0.052)	(0.046)	(0.046)
Interview Week 42	0.084*	0.096**	0.151***	0.155***
	(0.046)	(0.048)	(0.040)	(0.041)
Single		-0.159*		-0.315***
		(0.092)		(0.062)
Height		-0.001		-0.006***
		(0.002)		(0.002)
Underweight		0.067		-0.089*
		(0.052)		(0.046)
GPA of Junior HS (0-100)		-0.006***		0.000
		(0.002)		(0.001)
Mother's Educ - Univ		0.348*		
		(0.179)		
Father's Educ - Univ		-0.161		-0.250*
		(0.150)		(0.143)
Father's Occup - Employee		0.095**		0.051
		(0.040)		(0.036)
State Fixed Effects	Yes	Yes	Yes	Yes
Observations	1314	1306	1527	1524
Log likelihood	-876.162	-832.688	-1026.604	-974.010
P-value	0.003	0.000	0.000	0.000

Notes: Table displays marginal effects and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: Interview on Monday, interview in the morning, interview in week 43, not single, BMI in normal range, mother's and father's education primary or less, per capita income less than 5000 pesos, father's occupation unskilled worker.