

Educational Choices and Subjective Expectations of Returns: Evidence on Intra-Household Decisions and Gender Differences

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Abstract

The goal of this paper is to improve our understanding of educational decisions in two dimensions: First, we investigate, if determinants of schooling differ between male and female youths. We take into account expectations about monetary returns to schooling, perceptions about earnings and unemployment risk and returns to schooling in the marriage market. Second, we analyze 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. To address these questions we use a data set on Mexican teenagers 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.

We find that boys care more about monetary returns to schooling than girls –in particular in the decision to attend college–, while marriage market considerations seem particularly important for girls. Gender differences in preferences are smaller in families with more educated parents. Risk perceptions matter for the high school decision and seem generally more important from the perspective of the parents. In terms of the intra-household decision process, boys seem to either decide on their own or jointly with their fathers, while mothers are always involved in the schooling decisions of girls. The exact role of parents depends on household composition and parental education.

JEL-Classification: I21, I22, O15

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1 Introduction

The goal of this paper is to improve our understanding of educational decisions in two dimensions: First, we investigate, if determinants of schooling differ between male and female youths. For example, do boys care more about expected monetary returns than girls? Do girls care more about perceived risks of earnings and unemployment and about returns to schooling in the marriage market? Second, we analyze 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. 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. In addition we use proxies for returns in the marriage market and have 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. 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 shed some light on 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. This might improve the effectiveness of the intervention if youths play an important role in the decision about school attendance and parents only have imperfect control over the actions of the child. 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 intra-household decision process depending on the gender of the child.

The conventional literature on educational decisions uses data on earnings realizations to infer people's expectations relying on strong assumptions about people's information sets and about how people form expectations. For example, researchers need to make assumptions about how people deal with the fact that other people whose earnings they observe have self-selected into schooling. We avoid these problems by using direct data on people's subjective expectations of earnings. 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/or 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, our results suggest that boys and girls differ in their information sets and in the way they form expectations. This implies that results on gender differences in determinants of schooling and intra-household decision processes might be very sensitive to assumptions used in conventional approaches. Having direct data on boys' and girls' beliefs about future earnings allows us to be agnostic about the information they possess and how they form expectations and thus enables us to shed light on gender differences in determinants of schooling and intra-household decision-making.

We address our two questions of interest –on gender differences in determinants of schooling and in intra-household decision-making– in the context of two important schooling decisions: In particular we study 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 two different proxies. First, we use the ratio of unmarried men to women (in a similar age range) in the locality of residence to capture the availability of partners. Second, we use the ratio of unmarried men to women with a certain level of schooling, if the suitability of the partner depends on having a similar (or higher) education level. This could be particularly important for women, which is an empirical issue that we can shed some light on. The idea for using these proxies is as follows: If the likelihood of finding a (suitable) partner 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.

Our results indicate that boys care more about monetary returns to schooling than girls –in particular in the decision to attend college. Marriage market considerations on the other hand seem particularly important for girls. Gender differences in preferences depend on household characteristics: they are smaller in families with more educated parents. Risk perceptions matter for the high school decision and are particularly important from the perspective of the parents. In terms of the intra-household decision process, boys seem to either decide on their own or jointly with their fathers, while mothers are always involved in the schooling decisions of girls. The exact role of parents depends on household composition and parental education.

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)). 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 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. 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. 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 connection to gender differences in educational attainment, Goldin, Katz, and Kuziemko (2006) analyze reasons for the reversal of the college gender gap in the US. Goldin (1992) provides descriptive evidence that for American women who graduated between 1945 and 1960, nearly half of the return to college came in the form of a higher earning spouse. 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, but the majority of papers does not allow for children taking an active part in the decision (see, for example, Duflo (2003), Thomas (1990) and Rosenzweig and Schultz (1982) on gender differences in health investments and Edmonds (2006) on education).

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, which allows them to determine the number of decision-makers (for example, whether in a family with two parents and a child there are two or three decision-makers), but not to attribute roles individually. They 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. 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.

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. A notable exception is Lafortune (2010) who investigates

theoretically and empirically how changes in marriage market conditions affect pre-marital investments. She tests predictions of a model using variation brought about by immigration. Her results suggest that there are returns to education in the marriage market, and that both men and women take these returns into account when making educational decisions.

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, and presents some summary statistics on attendance rates and a variety of background variables. Section 4 provides evidence that people are able to give meaningful answers to the subjective expectation questions and investigates how informed parents and male/female youths are about potential returns to schooling as well as if there are differences in information sets between these different groups. Section 5 discusses the results. Section 6 concludes.

2 Schooling Decisions and Returns to Schooling: Model

The goals of this paper are twofold: First, we aim to improve our understanding of the main determinants of schooling decisions and analyze whether they differ between boys and girls. For this purpose we show how schooling decisions of young poor Mexicans relate to their expectations on the return and risk to that investment as well as to returns in the marriage market. Second, we intend to shed some light on the intra-household decision-process of schooling decisions in terms of whose expectations play a role and investigate again if there are gender differences.

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)). Kaufmann (2009) shows how to use data on people's subjective expectations in a simple model of college enrollment choice. 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.

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:

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

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.¹

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 schooling 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): the expected (gross) returns to senior high school ($z = 2$) and college ($z = 3$) defined as:

$$\rho_z = E(\log Y)_z - E(\log Y)_{z-1},$$

where $E(\log Y)_z$ 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. We include the expected return to college in the regression for the high school attendance choice to capture the fact that attending (and completing) high school provides the option to attend college later on.

In addition to the expected return, 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 .

¹For 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 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 enrolling 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 in the regressions two different proxies for returns in the marriage market, R^M . First, we use data on the ratio of unmarried men to women (in a certain age range) with at least a junior high school degree in the locality of residence based on the following idea: If there are few suitable partners available in the locality of residence, this is a push-factor to leave the locality. In the case of young unmarried girls, Mexican parents are usually reluctant to let their unmarried daughter move to a bigger city to work and live by herself, while they might be more willing to let her leave home to attend school and live with classmates. This creates a link between schooling decisions and marriage market considerations, which is likely to be less strong for boys, as they could migrate to a bigger city to work and find a spouse. But even for boys in the presence of strong patterns of assortative mating it might be less costly to find an educated partner at school or college. For this reason we interpret “suitable partner” in terms of a partner who has a similar education level (or higher) and thus use the ratio of unmarried men to women with an education level as high or higher than the youth deciding about schooling. As a second proxy we also use the ratio of unmarried men to women without constraining the measure to a specific education level for the following reasons: First, this measure might be more appropriate if the youth (for example, the male youth) cares less about the education level of the spouse. Second, we might be less worried about omitted variable biases than for the first proxy, which could in principle capture labor market conditions for people of certain education groups. Note though that these considerations could go in the opposite direction the way we enter the proxy: for women, we enter the ratio women to men, so that many educated women in a locality who reflect an attractive labor market for educated women would be expected to *decrease* the likelihood to leave and attend school, while marriage market considerations would increase the likelihood to attend school. In all specifications we control for locality size of residence.

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:

$$S = 1 \Leftrightarrow S^* = \alpha + \beta_3 * \rho_3 + \sum_{z=2}^3 \gamma_z * Var(\log Y)_z + \sum_{z=2}^3 \delta_z * P_z^W + R^M \mu + X' \theta + V > 0. \quad (2)$$

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 –in general and 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 implying that this measure is most likely more noisy than in the case of the high school enrollment decision.

To examine the question of gender differences in the determinants of schooling, we completely interact each regressor with a male and a female dummy to test for differential effects.

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:

$$S = 1 \Leftrightarrow S^* = \alpha + X'\beta + R^M\mu + \gamma_P * ParentsExpectations + \gamma_Y * YouthsExpectations + W > 0. \quad (3)$$

Obviously the parameters γ_P and γ_Y 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. 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.

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 in detail the consequences of this issue for the interpretation of our results. In this context we will present some evidence for families where the father is not in

the household (in about 25% of families the mother is single, separated, divorced or widowed) and compare families with fathers (and mothers) of different education levels to show how the intrahousehold decision process depends on household composition and parental education (which has been shown to be strongly correlated with different parenting styles). To analyze whether the effect of subjective expectations and marriage market considerations depends on household characteristics, we interact these variables with the household characteristics.

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 Oportunidades*. 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?*
 - (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. Below we present some evidence supporting this 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.² 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 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 (see figures ?? and ?? in the Appendix).³

²Individuals 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.

³A 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).

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, $p = Pr(Y^z > y_{mid}^z)$. 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, $f(\cdot)$, we can express expected earnings and variance of earnings for schooling degrees $z = 1, 2, 3$ for *each* individual as follows:

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

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

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

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

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

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 determine whose expectations matter for enrolment decisions, one would ideally want to have data on both parents' and youth' expectations. Unfortunately, we have to deal with the following two issues: first, we do not have information on fathers' expectations. As discussed in Section 2.2 we aim to shed some light on the role of the father by comparing households with different household composition (e.g. with and without father present) and parental education. Further details will be discussed in the result section. Second, the questions on the subjective distributions of earnings were not asked to both mother and children at the same time.

Instead 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 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.

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 an 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. 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 19 and

19 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 then move on to test how expectations vary with individual and family background characteristics and with average earnings in the municipality of residence and whether this differs between mother and youth respondents and boys and girls.

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)).⁴ We will show that –interestingly– these measures are also correlated with earnings *expectations*. Thus we will show 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 difference 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.⁵ 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

⁴The body mass index is defined as weight divided by height squared and we use medical definitions for categorizing who is underweight, overweight or obese.

⁵See 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.

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 than 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 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 subsamples 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, ($R = 0$):

$$R = 1 \Leftrightarrow R^* = \delta + X'\kappa + Z'\lambda + \epsilon \geq 0, \quad (4)$$

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 19 and 20 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.⁶

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, it is not enough 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,

⁶An 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.

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.

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.

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 Schooling Decisions and Returns to Schooling: Results

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 are interested in whether determinants differ for male and female youths. Second, we investigate who is participating in the decision by analyzing whose expectations

are relevant for different schooling decisions, those of the youths or of the parents and whether the intra-household decision process differs by the gender of the youth.

We consider two cohorts: 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. We estimate the schooling decisions jointly for boys and girls by interacting all regressors with gender dummies, but present the estimation results in two separate columns.

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. Ideally, we would want to have data on youth' expectations as well as mothers' and fathers' expectations about future earnings of their child. As we do not have this information available, we estimate the probit regressions separately for youth and mother respondents. This nevertheless allows us to shed some light on the intrahousehold decision process, which can be seen as follows: With two random samples, one with mother and one with youth respondents, the significance of different expectation measures in one or the other (or both) regression, should give us some evidence on who is participating in the decision in the following sense. If the coefficient on return is significant for both girls and mothers responding for their daughters, this provides evidence that their expectations are correlated (e.g. because they discuss the decision and their expectations) and the common component of the expectations affects the decision. If on the other hand, boys' coefficient on returns is significant, but mothers' is not, then either the boy is actively deciding himself (or his expectations reflect the expectations of the father who is influencing the decision). To analyze the potential impact of the father, we compare two-parent households to single headed households with no father present and compare households with different levels of education of father (and mother).

As the two subsamples of mother and youth respondents were not randomly selected (compare Section 4.2), 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.

5.1 Results

5.1.1 College Attendance Choice

We start our analysis with 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 equation (2), which relates the probability of enrolment to a set of control variables and expected (gross) returns to college, perceived unemployment and earnings risk under the two different schooling scenarios, as expected by both the mother and the youth, and a proxy for marriage market returns.

We present estimates for boys and girls in separate columns, even though they are estimated together in one model where all regressors are interacted with gender dummies to test for gender differences in coefficients. In all tables except Table 10, we report our estimates separately for youth respondents (Columns 1 and 2) and mother respondents (Columns 3 and 4) taking into account the selected nature of the sample. In Table 10 on the other hand we start off presenting estimates only for youth respondents with estimation results of the two different proxies for marriage market returns. In the tables, we report the coefficients of the relevant variables on the probability of enrolling into college (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 for both boys and girls. 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)). 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 slightly more important for girls than boys.

Interestingly, higher parental income appears more important for girls than boys in the decision to attend college. 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.

Table 10 reports estimates for youth respondents using the two different proxies for marriage market returns, in Column 1 (and 2) the ratio of unmarried men to women (women to men) with at least a senior high school degree for boys (and girls) and in Columns 3 and 4 the general ratio without conditioning on schooling. In this table we only include the subjective measure of returns to college, as in this case the measures of risk perceptions are not significant.

The key results of this table are twofold: First, returns to college are a strongly significant predictor for boys' decision to enrol in college. The coefficient is more than twice as large as for girls, for whom the coefficient is not significantly different from zero. This result is not driven by a larger standard error for girls, i.e. it is not the case that girls' measure of returns is more noisy. Second, for girls both proxies of marriage market returns are significant and in the expected direction: Few available (suitable) partners, i.e. many women per man, in the municipality of residence increase the likelihood of girls to attend college. The coefficient is twice that of boys (in the case of the proxy including only educated partners) and ten times as large as for boys for the proxy without conditioning on education levels, while also the coefficient for boys is positive as expected.

To understand whether these results reflect youths' own preferences or whether their expectations reflect parents' expectations who decide, we perform the following analysis: First, we compare the results of the same regression for youth and mother respondents to see in how far results might

be driven by reflecting mothers' expectations (Table 11). Second, we perform this comparison for families with and without father present and for fathers (and mothers) of different education levels to shed some light on the role of the father (Tables 12 to 14).

Table 11 shows that mothers' expectations do not explain boys' decision to go to college. Thus boys either decide themselves and estimates reflect their own preferences or their expectations reflect fathers' expectations who share information about future earnings with their sons and decide for/with their sons based on their expected returns. To analyze this further we concentrate on subsamples of single headed households without father present in the next paragraph. While girls' own expectations of monetary returns were not significant in explaining college attendance, mothers' expectations are significant predictors of girls' decisions: If the mother perceives a high likelihood of her daughter finding a job with a college degree, this significantly increases the probability of her daughter to attend college. This result suggest that mothers take an important part in the decision of their daughter to attend college, but at the same time there seems to be some information sharing, as for example the coefficient on returns to college are very similar in magnitude for girls and mothers (though not significant).

In Table 12 we analyze, if the role of youths' (and mothers') expectations change for families without father present. While for boys the coefficient on returns increases significantly, the decision of girls seems unaffected. For these types of families the coefficient for boys is significantly larger than for girls supporting the key message of Table 10. Monetary returns seem significantly more important for boys than girls, at least in the subsample of single-headed families without father.

Lastly, we compare household with different education levels of mothers and fathers to capture potentially important differences in parenting styles and intrahousehold decision processes. Tables 13 and 14 lead to similar conclusions. In families with less educated mothers (five years of schooling or less), the coefficient on returns for boys is large and significant –so boys decide on their own or with their father–, while monetary returns play less of a role for girls (see Table 13). For girls on the other hand, mothers' perceptions of the probability of work with a college degree is important in explaining girls' college attendance choice. In families with more educated mothers (with at least completed primary education), the coefficient on returns to college is very similar for boys and girls (though not significant, while the p-value for girls is 0.13). The return expectations of more educated mothers matter, but only for girls. Thus educated mothers seem to be sharing information about future earnings with their daughters and deciding jointly about college attendance (their behavior seems unaffected by presence of father, see above), while caring about monetary returns and work probabilities. In addition marriage market considerations seem to play a role in the decision to enrol in college for more educated mothers, but not for less educated mothers.

Results are similar when comparing the role of expectations for different education levels of the father (see Table 14). One important difference is that for educated fathers, mothers' return expectations for girls do not matter (and are basically zero), while girls' own coefficient on returns is as high as the one of boys. Possibly this could be interpreted as educated fathers deciding for/with their daughters without sharing information with their wives, unless the wife is educated as well. But one would require data on both fathers' and mothers' expectations for more conclusive

evidence.

This section provides evidence that in the context of college enrollment decisions, there are important gender differences in the determinants of school choices as well as in the intrahousehold decision process. In addition it is important to take into account household composition and parental education to capture differences in parenting styles (and differences in preferences).

5.1.2 High School Attendance Choice

We now turn our attention to the decision to enrol or not in high school for youths who have just finished junior 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.

In the following tables on high school attendance (Tables 15 to 18), we report our estimates separately for youth respondents (Columns 1 and 2) and mother respondents (Columns 3 and 4) taking into account the selected nature of the sample. Again we present estimates for boys and girls in separate columns, while they are estimated together and 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.

Individual and family background variables have the expected signs: the probability of college attendance is increasing in GPA and in parental education. In the context of the high school enrolment decision, a larger number of siblings decreases the likelihood to continue schooling, in particular the presence of male siblings. Surprisingly, the negative effect is stronger on boys than girls.⁷ Parental income does not seem to matter in the decision to enrol in high school, though it is important to keep in mind that the sample used in this paper is already very homogenous and represents the poorer part of the Mexican population.

Table 15 suggests that for the cohort that is three years younger and deciding about high school enrolment, gender differences are less pronounced (mirroring a general trend of more gender equality in education in recent years). Again boys' coefficient on returns (to college not high school) is significant, while girls' is not, but the coefficient of boys is only slightly larger in magnitude. In addition a higher perceived probability of having a job with a college degree significantly increases the likelihood to enrol in high school for boys, but not for girls. These results suggest that having the option to enrol in college with a high school degree is very important for the high school enrolment decision.⁸ For girls marriage market considerations seem to play an important role also in the decision to enrol in high school. The coefficient on the ratio of unmarried women to men with at least a junior high school degree is significant only for girls and larger in magnitude than for boys. At the same time the other proxy –without conditioning on education– is also close to significance for boys (results not presented, available upon request).

Comparing Columns 1 and 2 to Columns 3 and 4 suggests that for the high school decision,

⁷These variables were never significant in the college attendance decision and thus do not appear in the tables.

⁸This seems reasonable in the presence of strong convexities of earnings with respect to schooling, i.e. low returns to high school, very large returns to college.

both boys and girls decision are affected by mothers' expectations. Mothers' perceptions about the probability of finding a job with a college degree is an important predictor of the decision for both boys and girls, but boys seem to be playing some independent role as well (or reflecting fathers' expectations and fathers' participation in the decision).

Table 16 shows how coefficients on expectations and marriage market proxies are affected by the absence of a father. The effect is less strong than in the case of the college decision, but again there is an increase in the role of boys' own expectations (the probability of having a job with a high school degree significantly increases the likelihood to enrol) which is not reflected in mothers' expectations. Thus also in the case of junior high school graduates, boys seem to be the main decision-maker for their decision to enrol in high school in single headed households without father. Once again this is not true for girls. The role of girls' expectations is unchanged by presence or absence of father, while surprisingly mothers' perception of the probability of work with a high school degree –which in general has a positive effect on high school attendance– now has a negative effect (i.e. if a girl is more likely to work with a high school degree, the mother is less likely to send the girl to high school maybe to avoid losing her as a help in her own home and/or her company).

The results comparing families with more and less educated mothers (fathers) are striking (see Tables 17 and 18). While in families with less educated mothers, coefficients on returns are not significant, for educated mothers girl's own expectations about returns to college are now a significant predictor of her decision to enrol in high school with a coefficient that is double in size compared to that of boys (boys' coefficient not significant). This is not reflected in mothers' expectations, so either now the girl plays an active role and strongly cares about monetary returns or –in educated families– the father shares his information with his daughter and cares about her returns. In the latter case it is surprising that the father seems to care more about daughter's returns than that of sons', though maybe for educated parents boys should go to high school in any case while only high return girls go. In families with less educated parents on the other hand, marriage market considerations seem very important for girls' decision to enrol in high school. This factor seems less relevant for families with more educated parents, potentially because those foresee the option for their children to also continue to college and thus care less about the immediate marriage market prospects of their 15-year old children.

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, in two main dimensions. First, we analyzed whether determinants of schooling differ between male and female youths taking into account expectations about monetary returns to schooling, perceptions about earnings and unemployment risk and returns to schooling in the marriage market. Second, we aimed to 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. To address these questions we used

a data set on Mexican teenagers that elicits their own and mothers' 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.

Our results indicate that boys care more about monetary returns to schooling than girls –in particular in the decision to attend college. Marriage market considerations on the other hand seem particularly important for girls. Gender differences in preferences depend on household characteristics: they are smaller in families with more educated parents. Risk perceptions matter for the high school decision and are particularly important from the perspective of the parents. In terms of the intra-household decision process, boys seem to either decide on their own or jointly with their fathers, while mothers are always involved in the schooling decisions of girls. The exact role of parents depends on household composition and parental education.

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. 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: Respondent:	Boys			Girls		
	Youth Mean/(SE)	Mother Mean/(SE)	Diff (P-Val)	Youth Mean/(SE)	Mother Mean/(SE)	Diff (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: Respondent:	Boys			Girls		
	Youth Mean/(SE)	Mother Mean/(SE)	Diff (P-Val)	Youth Mean/(SE)	Mother Mean/(SE)	Diff (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: Junior High School Graduates

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

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

Respondent:	Boys				Girls			
	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** (0.075)	0.184*** (0.067)	0.227*** (0.065)	0.060 (0.066)	0.043 (0.058)	0.181*** (0.058)
Log Census Earn (Resid Municip) - Sr HS	0.208** (0.101)	0.189** (0.091)	0.054 (0.088)	-0.054 (0.072)	-0.070 (0.063)	-0.119* (0.063)
Log Census Earn (Resid Municip) - Coll HS	-0.129 (0.081)	-0.134* (0.073)	0.050 (0.070)	0.030 (0.059)	0.009 (0.052)	0.048 (0.052)
Single	-0.105 (0.196)	-0.106 (0.177)	0.096 (0.170)	-0.038 (0.202)	-0.024 (0.178)	-0.440** (0.178)
Underweight	0.001 (0.053)	-0.004 (0.048)	-0.049 (0.046)	-0.025 (0.048)	-0.074* (0.042)	-0.095** (0.042)
Obese	-0.016 (0.135)	0.050 (0.121)	0.033 (0.117)	-0.217 (0.140)	-0.298** (0.124)	-0.203* (0.123)
GPA of Junior HS (0-100)	-0.000 (0.002)	0.002 (0.002)	0.000 (0.002)	0.004** (0.002)	0.003 (0.002)	0.003* (0.002)
Mother's Educ - Sr HS	-0.155 (0.134)	-0.102 (0.117)	0.017 (0.114)	0.247* (0.131)	0.082 (0.117)	-0.034 (0.115)
Per cap Income - 5 to 10k	-0.051 (0.047)	-0.015 (0.041)	0.012 (0.040)	0.056 (0.040)	0.078** (0.036)	0.069** (0.035)
Per cap Income - more than 10k	0.000 (0.056)	-0.009 (0.049)	0.017 (0.048)	0.014 (0.046)	0.032 (0.041)	0.070* (0.040)
Father's Occup - Employee	0.004 (0.053)	0.011 (0.046)	-0.025 (0.045)	0.121** (0.048)	0.083* (0.043)	0.072* (0.042)
Father's Occup - Employer	-0.191 (0.287)	0.049 (0.252)	0.275 (0.246)	0.340 (0.232)	0.624*** (0.207)	0.467** (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 (0.058)	-0.005 (0.056)	0.067 (0.055)	0.069 (0.051)	0.064 (0.046)	0.062 (0.048)
Log Census Earn (Resid Municip) - Sr HS	0.108 (0.077)	0.119 (0.073)	0.093 (0.072)	-0.111* (0.058)	-0.114** (0.053)	-0.056 (0.055)
Log Census Earn (Resid Municip) - Coll HS	0.043 (0.096)	0.121 (0.092)	0.190** (0.090)	-0.134* (0.075)	-0.095 (0.068)	0.136* (0.071)
Ratio Unmarried Men to Women (At Least Jun HS)	-0.044 (0.048)	-0.041 (0.046)	-0.002 (0.045)	-0.041 (0.039)	-0.093*** (0.035)	-0.049 (0.037)
Height	0.006** (0.002)	0.004* (0.002)	0.002 (0.002)	0.004** (0.002)	0.003* (0.002)	0.003* (0.002)
Underweight	-0.088* (0.052)	-0.063 (0.049)	-0.039 (0.049)	-0.078 (0.051)	-0.116** (0.046)	-0.086* (0.048)
Obese	-0.111 (0.125)	-0.147 (0.120)	-0.216* (0.117)	-0.025 (0.094)	0.028 (0.085)	-0.120 (0.089)
GPA of Junior HS (0-100)	0.001 (0.003)	0.000 (0.003)	0.001 (0.003)	0.002 (0.002)	0.003* (0.002)	0.004** (0.002)
Mother's Educ - Jr HS	-0.107** (0.051)	-0.041 (0.048)	-0.037 (0.048)	-0.056 (0.046)	-0.060 (0.042)	-0.004 (0.045)
Mother's Educ - Univ	0.106 (0.241)	0.184 (0.226)	0.053 (0.224)	-0.487** (0.201)	-0.355* (0.182)	-0.173 (0.196)
Father's Educ - Jr HS	0.044 (0.059)	0.036 (0.055)	0.040 (0.055)	0.104** (0.050)	0.069 (0.046)	0.020 (0.049)
Father's Educ - Univ	-0.040 (0.240)	-0.006 (0.225)	0.175 (0.223)	0.353** (0.168)	0.185 (0.152)	0.229 (0.164)
Per cap Income - 5 to 10k	0.037 (0.047)	0.069 (0.044)	0.074* (0.044)	0.018 (0.041)	0.018 (0.037)	0.093** (0.040)
Per cap Income - more than 10k	0.108** (0.052)	0.091* (0.049)	0.149*** (0.048)	0.027 (0.045)	0.005 (0.041)	0.030 (0.044)
Father's Occup - Employer	-0.057 (0.248)	-0.345 (0.229)	-0.599*** (0.229)	-0.228 (0.436)	-0.327 (0.395)	0.184 (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 (0.081)	0.107 (0.081)	0.014 (0.063)	-0.025 (0.065)
Log Census Earn (Resid Municip) - Sr HS	0.007 (0.076)	0.021 (0.076)	0.043 (0.057)	0.048 (0.059)
Log Census Earn (Resid Municip) - Coll HS	0.066 (0.066)	0.097 (0.066)	0.199*** (0.052)	0.293*** (0.054)
Ratio Unmarried Men to Women (At Least Sen HS)	0.063* (0.033)	0.012 (0.033)	0.037 (0.027)	0.020 (0.028)
Single	-0.218** (0.111)	-0.076 (0.111)	-0.276** (0.124)	-0.309** (0.129)
Height	-0.002 (0.003)	-0.002 (0.003)	0.003 (0.002)	0.008*** (0.002)
Underweight	-0.032 (0.068)	0.047 (0.068)	-0.054 (0.061)	-0.143** (0.064)
Obese	-0.010 (0.144)	-0.136 (0.143)	0.265** (0.119)	0.338*** (0.124)
Mother's Educ - Sr HS	-0.130 (0.182)	-0.165 (0.181)	0.166 (0.123)	0.251** (0.126)
Father's Educ - Sr HS	0.139 (0.111)	0.152 (0.111)	-0.183* (0.101)	-0.015 (0.104)
Father's Educ - Univ	0.415* (0.229)	0.374 (0.229)	-0.301* (0.183)	-0.133 (0.188)
Father's Occup - Employer	0.011 (0.311)	-0.253 (0.310)	0.073 (0.217)	0.399* (0.222)
Father's Occup - Self-Empl.	0.112* (0.062)	0.166*** (0.062)	-0.052 (0.054)	-0.029 (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 (0.044)	0.088** (0.044)	0.121*** (0.047)	0.118** (0.052)
Log Census Earn (Resid Municip) - Sr HS	0.075 (0.061)	-0.013 (0.061)	-0.054 (0.054)	-0.021 (0.059)
Log Census Earn (Resid Municip) - Coll HS	-0.148** (0.072)	-0.026 (0.072)	-0.179*** (0.064)	-0.076 (0.071)
Overweight	-0.108* (0.059)	-0.134** (0.059)	0.048 (0.051)	0.002 (0.056)
GPA of Junior HS (0-100)	0.001 (0.003)	0.005* (0.003)	0.003* (0.002)	0.004** (0.002)
Mother's Educ - Jr HS	-0.060 (0.059)	-0.020 (0.058)	-0.134*** (0.048)	-0.095* (0.053)
Father's Educ - Sr HS	0.117 (0.113)	0.152 (0.110)	0.191* (0.103)	0.070 (0.114)
Father's Educ - Univ	-0.311 (0.339)	-0.367 (0.337)	0.487*** (0.159)	0.357** (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: College Attendance Choice of Male and Female Teens: Youth Respondents

Dependent Variable	College Attendance Decision			
	Marriage Boys	Market Proxy 1 Girls	Marriage Boys	Market Proxy 2 Girls
Expected Return - College	0.432*** (0.162)	0.172 (0.128)	0.420*** (0.160)	0.173 (0.126)
Ratio of Unmarried Men to Women (Sr HS)	0.089 (0.062)			
Ratio of Unmarried Women to Men (Sr HS)		0.204* (0.123)		
Ratio of Unmarried Men to Women			0.060 (0.437)	
Ratio of Unmarried Women to Men				0.664* (0.391)
Obese	-0.524 (0.567)	-0.692* (0.371)	-0.522 (0.560)	-0.720* (0.370)
GPA of Jr HS (0-100)	0.029*** (0.009)	0.026*** (0.007)	0.032*** (0.009)	0.025*** (0.007)
Mother's Educ - Jr HS	0.357** (0.162)	0.005 (0.156)	0.354** (0.161)	0.010 (0.154)
Father's Educ - Jr HS	0.024 (0.180)	0.362** (0.157)	0.029 (0.178)	0.349** (0.156)
Father's Educ - Sr HS	0.409 (0.309)	0.459* (0.274)	0.412 (0.307)	0.448* (0.270)
Per Cap Income - 5 to 10k	-0.032 (0.147)	0.226* (0.133)	-0.002 (0.145)	0.228* (0.132)
Per Cap Income - above 10k	0.14 (0.168)	0.543*** (0.160)	0.139 (0.167)	0.529*** (0.160)
Dist to Univ - 20 to 40km	-0.361** (0.151)	-0.254* (0.131)	-0.337** (0.152)	-0.262** (0.130)
Dist to Univ above 40km	-0.336* (0.177)	-0.516*** (0.157)	-0.261 (0.177)	-0.457*** (0.159)
Tuition more than 750 Pesos	0.058 (0.191)	-0.686*** (0.186)	0.058 (0.189)	-0.617*** (0.186)
Observations		2829		2841
Censored Obs		1468		1476
Log Likelihood		-2518.780		-2527.430
Sample Sel: Corr of Errors (P-Val)		0.299 (0.464)		0.357 (0.359)

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, not single, not obese, mother's and father's education primary or less, per capita income less than 5000 pesos, distance to university less than 20km, tuition costs less than 750 pesos. All specifications include state dummies.

Table 11: College Attendance Choice of Male and Female Teens: Youth and Mother Expectations

Dependent Variable	College Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return - College	0.411** (0.164)	0.171 (0.130)	-0.031 (0.143)	0.211 (0.141)
Prob of Work - Sr HS	-0.563 (0.431)	0.287 (0.350)	-0.528 (0.365)	0.053 (0.350)
Prob of Work - College	0.265 (0.458)	0.035 (0.407)	0.540 (0.425)	0.911** (0.400)
Sex Ratio (Sr HS)	0.089 (0.063)	0.202* (0.124)	0.028 (0.071)	-0.135 (0.130)
Obese	-0.475 (0.572)	-0.729* (0.377)	-0.260 (0.331)	-0.384 (0.297)
GPA of Jr HS (0-100)	0.031*** (0.009)	0.025*** (0.007)	0.025*** (0.006)	0.006 (0.004)
Mother's Educ - Jr HS	0.361** (0.163)	0.000 (0.156)	0.397*** (0.146)	0.394*** (0.142)
Mother's Educ - Sr HS	0.468 (0.460)	0.487 (0.319)	0.956** (0.385)	0.700** (0.284)
Father's Educ - Jr HS	0.026 (0.181)	0.358** (0.157)	0.194 (0.154)	-0.022 (0.150)
Father's Educ - Sr HS	0.441 (0.313)	0.451 (0.275)	-0.011 (0.309)	0.543* (0.303)
Per cap Income - 5 to 10k	-0.038 (0.149)	0.220* (0.133)	-0.040 (0.124)	0.291** (0.119)
Per cap Income - above 10k	0.149 (0.170)	0.541*** (0.159)	0.326** (0.144)	0.792*** (0.143)
Dist to Univ - 20 to 40km	-0.381** (0.153)	-0.246* (0.131)	-0.030 (0.129)	0.121 (0.121)
Dist to Univ above 40km	-0.328* (0.179)	-0.514*** (0.157)	0.117 (0.154)	0.148 (0.146)
Tuition more than 750 Pesos	0.070 (0.192)	-0.707*** (0.187)	-0.004 (0.168)	-0.224 (0.173)
Observations	2829		2841	
Censored Obs	1468		1476	
Log Likelihood	-2517.258		-2720.170	
Sample Sel: Corr of Errors (P-Val)	0.276 (0.500)		0.094 (0.760)	

Notes: Table displays coefficients and standard errors in brackets. * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. Excl. categories: male, not single, not obese, mother's and father's education primary or less, per capita income less than 5000 pesos, distance to university less than 20km, tuition costs less than 750 pesos. All specifications include state dummies.

Table 12: College Attendance Choice of Male and Female Teens: No Father in Household

Dependent Variable	College Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return - College	0.240 (0.187)	0.178 (0.146)	-0.006 (0.150)	0.198 (0.153)
Prob of Work - Sr HS	-0.659 (0.510)	0.135 (0.382)	-0.434 (0.384)	0.010 (0.384)
Prob of Work - College	0.422 (0.528)	0.034 (0.438)	0.257 (0.431)	0.998** (0.417)
Sex Ratio (Sr HS)	0.100 (0.068)	0.209 (0.132)	0.076 (0.079)	-0.053 (0.136)
Expected Return College * No Father in Household	1.093** (0.427)	-0.019 (0.328)	-0.090 (0.499)	0.167 (0.359)
Prob of Work Sr HS * No Father in Household	0.728 (1.009)	0.849 (1.000)	-0.567 (1.093)	0.405 (0.904)
Prob of Work College * No Father in Household	-0.778 (0.907)	-0.592 (0.970)	1.311 (1.031)	0.110 (0.848)
Sex Ratio (Sr HS) * No Father in Household	-0.129 (0.164)	-0.113 (0.312)	-0.395 (0.299)	-0.489 (0.310)
GPA of Jr HS (0-100)	0.037*** (0.010)	0.023*** (0.008)	0.021*** (0.005)	0.008* (0.004)
Mother's Educ - Jr HS	0.373** (0.167)	0.029 (0.158)	0.384*** (0.147)	0.409*** (0.143)
Mother's Educ - Sr HS	0.416 (0.465)	0.535* (0.324)	0.975** (0.388)	0.708** (0.285)
Father's Educ - Jr HS	0.151 (0.189)	0.368** (0.160)	0.218 (0.156)	-0.030 (0.152)
Father's Educ - Sr HS	0.520 (0.325)	0.463* (0.282)	0.027 (0.310)	0.471 (0.298)
Per cap Income - 5 to 10k	-0.063 (0.155)	0.222* (0.133)	-0.051 (0.124)	0.296** (0.120)
Per cap Income - above 10k	0.080 (0.178)	0.530*** (0.153)	0.328** (0.144)	0.793*** (0.143)
Dist to Univ - 20 to 40km	-0.399** (0.158)	-0.248* (0.131)	-0.014 (0.130)	0.125 (0.121)
Dist to Univ above 40km	-0.312* (0.185)	-0.519*** (0.161)	0.132 (0.155)	0.148 (0.147)
Tuition more than 750 Pesos	0.004 (0.199)	-0.713*** (0.179)	-0.016 (0.169)	-0.235 (0.174)
Observations	2829		2841	
Censored Obs	1468		1476	
Log Likelihood	-2514.206		-2720.727	
Sample Sel: Corr of Errors (P-Val)	0.096 (0.799)		0.069 (0.827)	

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, not single, not obese, mother's and father's education primary or less, per capita income less than 5000 pesos, distance to university less than 20km, tuition costs less than 750 pesos. All specifications include state dummies.

Table 13: College Attendance Choice of Male and Female Teens: Educated versus Less Educated Mothers

Dependent Variable	College Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return College * Mother Less Educated	0.575*** (0.210)	0.104 (0.177)	-0.058 (0.195)	0.098 (0.181)
Prob of Work Sr HS * Mother Less Educated	0.091 (0.533)	0.428 (0.465)	-0.395 (0.506)	-0.619 (0.462)
Prob of Work College * Mother Less Educated	-0.203 (0.535)	-0.033 (0.501)	0.307 (0.548)	1.586*** (0.531)
Sex Ratio (Sr HS) * Mother Less Educated	0.090 (0.072)	0.003 (0.198)	0.074 (0.087)	-0.199 (0.183)
Expected Return College * Mother Educated	0.247 (0.249)	0.239 (0.189)	-0.060 (0.218)	0.494** (0.238)
Prob of Work Sr HS * Mother Educated	-1.869** (0.741)	0.090 (0.530)	-0.399 (0.538)	1.246** (0.563)
Prob of Work College * Mother Educated	1.561** (0.730)	-0.052 (0.558)	0.590 (0.573)	0.103 (0.556)
Sex Ratio (Sr HS) * Mother Educated	0.065 (0.105)	0.292* (0.151)	-0.043 (0.132)	0.048 (0.178)
GPA of Jr HS (0-100)	0.037*** (0.010)	0.022*** (0.008)	0.024*** (0.007)	0.007 (0.005)
Mother's Educ - Jr HS	0.451** (0.194)	-0.066 (0.175)	0.226 (0.172)	0.142 (0.170)
Mother's Educ - Sr HS	0.452 (0.467)	0.424 (0.324)	0.890** (0.393)	0.394 (0.298)
Father's Educ - Jr HS	0.039 (0.186)	0.355** (0.158)	0.131 (0.159)	-0.095 (0.156)
Father's Educ - Sr HS	0.446 (0.319)	0.464* (0.278)	-0.004 (0.312)	0.452 (0.309)
Per cap Income - 5 to 10k	-0.050 (0.152)	0.180 (0.134)	0.013 (0.128)	0.272** (0.122)
Per cap Income - above 10k	0.158 (0.174)	0.486*** (0.156)	0.330** (0.150)	0.774*** (0.151)
Dist to Univ - 20 to 40km	-0.404*** (0.155)	-0.249* (0.131)	0.001 (0.133)	0.102 (0.127)
Dist to Univ above 40km	-0.319* (0.181)	-0.535*** (0.159)	0.162 (0.159)	0.176 (0.153)
Tuition more than 750 Pesos	0.070 (0.193)	-0.692*** (0.182)	-0.043 (0.170)	-0.250 (0.179)
Observations	2829		2841	
Censored Obs	1468		1476	
Log Likelihood	-2517.670		-2619.034	
Sample Sel: Corr of Errors (P-Val)	0.215 (0.564)		0.164 (0.609)	

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, not single, not obese, mother's and father's education primary or less, per capita income less than 5000 pesos, distance to university less than 20km, tuition costs less than 750 pesos. All specifications include state dummies.

Table 14: College Attendance Choice of Male and Female Teens: Educated versus Less Educated Fathers

Dependent Variable	College Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return College * Father Less Educated	0.453** (0.179)	0.127 (0.145)	-0.094 (0.160)	0.249 (0.153)
Prob of Work Sr HS * Father Less Educated	-0.191 (0.481)	0.159 (0.383)	-0.640 (0.395)	-0.177 (0.391)
Prob of Work College * Father Less Educated	-0.152 (0.505)	0.045 (0.448)	0.488 (0.435)	1.176*** (0.447)
Sex Ratio (Sr HS) * Father Less Educated	0.087 (0.071)	0.132 (0.138)	0.055 (0.081)	-0.108 (0.136)
Expected Return College * Father Educated	0.383 (0.441)	0.344 (0.306)	0.056 (0.347)	-0.098 (0.405)
Prob of Work Sr HS * Father Educated	-1.699* (1.011)	0.659 (0.867)	0.743 (1.037)	1.533* (0.848)
Prob of Work College * Father Educated	2.726** (1.067)	-0.261 (0.879)	-0.700 (1.080)	0.087 (0.853)
Sex Ratio (Sr HS) * Father Educated	0.098 (0.122)	0.545* (0.290)	-0.008 (0.176)	0.194 (0.369)
GPA of Jr HS (0-100)	0.036*** (0.010)	0.024*** (0.008)	0.023*** (0.005)	0.008* (0.004)
Mother's Educ - Jr HS	0.381** (0.169)	0.002 (0.157)	0.330** (0.152)	0.391*** (0.148)
Mother's Educ - Sr HS	0.460 (0.460)	0.503 (0.316)	1.069*** (0.389)	0.696** (0.288)
Father's Educ - Jr HS	-1.278* (0.702)	-0.280 (0.585)	-0.200 (0.470)	-0.335 (0.450)
Father's Educ - Sr HS	-0.968 (0.797)	-0.188 (0.655)	-0.388 (0.546)	0.223 (0.498)
Per cap Income - 5 to 10k	0.008 (0.152)	0.224* (0.133)	0.014 (0.126)	0.293** (0.121)
Per cap Income - above 10k	0.155 (0.173)	0.522*** (0.156)	0.320** (0.150)	0.789*** (0.149)
Dist to Univ - 20 to 40km	-0.430*** (0.155)	-0.256* (0.131)	-0.012 (0.132)	0.136 (0.125)
Dist to Univ above 40km	-0.391** (0.183)	-0.522*** (0.158)	0.168 (0.158)	0.175 (0.151)
Tuition more than 750 Pesos	0.032 (0.194)	-0.691*** (0.182)	-0.049 (0.170)	-0.212 (0.176)
Observations	2829		2841	
Censored Obs	1468		1476	
Log Likelihood	-2516.407		-2625.422	
Sample Sel: Corr of Errors (P-Val)	0.213 (0.558)		0.233 (0.465)	

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, not single, not obese, mother's and father's education primary or less, per capita income less than 5000 pesos, distance to university less than 20km, tuition costs less than 750 pesos. All specifications include state dummies.

Table 15: High School Attendance Choice of Male and Female Teens: Youth and Mother Expectations

Dependent Variable	High School Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return - Sr HS	0.007 (0.190)	0.138 (0.181)	0.266 (0.221)	-0.158 (0.238)
Expected Return - College	0.270* (0.164)	0.254 (0.168)	-0.197 (0.211)	-0.183 (0.212)
Prob of Work - Jr HS	0.122 (0.367)	0.024 (0.318)	0.289 (0.374)	-0.731* (0.422)
Prob of Work - Sr HS	-0.139 (0.486)	-0.053 (0.425)	-0.662 (0.550)	-0.136 (0.534)
Prob of Work - College	0.640* (0.389)	-0.219 (0.386)	1.087** (0.520)	1.125** (0.490)
Ratio of Unmarried Men to Women (Jr HS)	-0.003 (0.098)		-0.251** (0.110)	
Ratio of Unmarried Women to Men (Jr HS)		0.445* (0.255)		0.301 (0.243)
Number of Male Siblings	-0.140*** (0.051)	-0.095** (0.046)	0.025 (0.055)	-0.009 (0.060)
Number of Female Siblings	-0.124** (0.050)	-0.058 (0.047)	-0.122** (0.051)	0.019 (0.053)
GPA of Jr HS (0-100)	0.025*** (0.007)	0.034*** (0.008)	0.026*** (0.008)	0.030*** (0.008)
Mother's Educ - Jr HS	0.242 (0.165)	0.397** (0.166)	0.269 (0.182)	0.450** (0.209)
Father's Educ - Sr HS	0.792* (0.470)	0.305 (0.343)	0.663 (0.443)	0.262 (0.446)
Observations	2364		2364	
Censored Obs	967		1397	
Log Likelihood	-1985.688		-1841.770	
Sample Sel: Corr of Errors (P-Val)	-0.606 (0.023)		0.599 (0.086)	

Notes: Table displays coefficients and standard errors in brackets. * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. Excl. categories: male, size of locality less than 15k, mother's and father's education primary or less, per capita income less than 5000 pesos. All specifications include state dummies.

Table 16: High School Attendance Choice of Male and Female Teens: No Father in Household

Dependent Variable	High School Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return - Sr HS	-0.061 (0.217)	0.118 (0.203)	0.203 (0.243)	-0.079 (0.275)
Expected Return - College	0.139 (0.183)	0.217 (0.191)	-0.253 (0.231)	-0.309 (0.240)
Prob of Work - Jr HS	0.611 (0.445)	0.144 (0.362)	0.498 (0.414)	-1.030** (0.502)
Prob of Work - Sr HS	-0.853 (0.618)	-0.401 (0.483)	-0.622 (0.601)	0.650 (0.659)
Prob of Work - College	1.080** (0.481)	0.013 (0.491)	0.887 (0.553)	0.708 (0.558)
Sex Ratio (Jr HS)	0.027 (0.118)	0.348 (0.268)	-0.248** (0.118)	0.304 (0.252)
Expected Return Sr HS * No Father in Household	0.443 (0.497)	-0.030 (0.479)	0.111 (0.588)	-0.291 (0.551)
Expected Return College * No Father in Household	0.628 (0.458)	0.209 (0.421)	0.688 (0.667)	0.316 (0.463)
Prob of Work Jr HS * No Father in Household	-1.338 (0.910)	-0.564 (0.796)	-1.483 (1.131)	0.829 (0.982)
Prob of Work Sr HS * No Father in Household	2.118* (1.128)	1.543 (1.085)	-0.568 (1.596)	-2.693** (1.357)
Prob of Work College * No Father in Household	-1.417 (0.912)	-1.580 (1.131)	1.163 (1.232)	1.184 (1.102)
Sex Ratio (Jr HS) * No Father in Household	-0.155 (0.206)	0.687 (0.669)	-0.028 (0.216)	0.054 (0.609)
Locality Size 15 to 50k	0.437** (0.218)	-0.107 (0.179)	0.277 (0.213)	0.079 (0.197)
Locality Size 15 to 50k * No Father in Household	-0.867** (0.428)	0.124 (0.402)	-0.247 (0.434)	0.231 (0.414)
Number of Male Siblings	-0.156*** (0.054)	-0.089* (0.048)	0.026 (0.056)	-0.020 (0.061)
Number of Female Siblings	-0.156*** (0.053)	-0.049 (0.048)	-0.115** (0.052)	0.013 (0.054)
GPA of Jr HS (0-100)	0.025*** (0.008)	0.034*** (0.008)	0.026*** (0.008)	0.030*** (0.008)
Mother's Educ - Jr HS	0.303* (0.171)	0.397** (0.170)	0.282 (0.184)	0.439** (0.213)
Father's Educ - Sr HS	0.826* (0.480)	0.393 (0.349)	0.671 (0.445)	0.257 (0.448)
Observations	2364		2364	
Censored Obs	967		1397	
Log Likelihood	-1973.460		-1831.879	
Sample Sel: Corr of Errors (P-Val)	-0.552 (0.050)		0.603 (0.088)	

Notes: Table displays coefficients and standard errors in brackets. * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$. Excl. categories: male, size of locality less than 15k, mother's and father's education primary or less, per capita income less than 5000 pesos. All specifications include state dummies.

Table 17: High School Attendance Choice of Male and Female Teens: Educated versus Less Educated Mothers

Dependent Variable	High School Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return Sr HS * Mother Less Educated	0.112 (0.230)	0.210 (0.232)	0.432 (0.314)	-0.100 (0.294)
Expected Return College * Mother Less Educated	0.234 (0.217)	0.147 (0.199)	-0.268 (0.293)	-0.420 (0.294)
Prob of Work Jr HS * Mother Less Educated	-0.035 (0.483)	0.466 (0.396)	-0.008 (0.501)	-0.669 (0.530)
Prob of Work Sr HS * Mother Less Educated	-0.245 (0.649)	-0.300 (0.542)	-0.530 (0.758)	0.656 (0.721)
Prob of Work College * Mother Less Educated	0.728 (0.505)	-0.832 (0.574)	0.933 (0.714)	0.458 (0.605)
Sex Ratio (Jr HS) * Mother Less Educated	-0.048 (0.116)	0.763** (0.315)	-0.232* (0.122)	0.337 (0.275)
Expected Return Sr HS * Mother Educated	-0.135 (0.312)	0.015 (0.284)	-0.035 (0.315)	-0.101 (0.445)
Expected Return College * Mother Educated	0.246 (0.235)	0.583* (0.297)	-0.076 (0.321)	0.241 (0.331)
Prob of Work Jr HS * Mother Educated	0.524 (0.564)	-0.559 (0.529)	1.047* (0.613)	-1.015 (0.707)
Prob of Work Sr HS * Mother Educated	-0.057 (0.695)	0.105 (0.691)	-1.225 (0.871)	-1.840* (1.072)
Prob of Work College * Mother Educated	0.528 (0.530)	0.448 (0.621)	1.360* (0.695)	2.393*** (0.882)
Sex Ratio (Jr HS) * Mother Educated	0.042 (0.161)	-0.117 (0.355)	-0.069 (0.194)	0.414 (0.424)
Number of Male Siblings	-0.146*** (0.052)	-0.094** (0.047)	0.018 (0.057)	0.004 (0.062)
Number of Female Siblings	-0.125** (0.050)	-0.060 (0.046)	-0.137*** (0.053)	0.024 (0.055)
GPA of Jr HS (0-100)	0.025*** (0.008)	0.033*** (0.008)	0.027*** (0.008)	0.030*** (0.008)
Mother's Educ - Jr HS	0.070 (0.197)	0.280 (0.201)	0.107 (0.216)	0.440* (0.238)
Observations	2364		2364	
Censored Obs	967		1397	
Log Likelihood	-1969.777		-1824.138	
Sample Sel: Corr of Errors (P-Val)	-0.683 (0.016)		0.595 (0.088)	

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, size of locality less than 15k, mother's and father's education primary or less, per capita income less than 5000 pesos. All specifications include state dummies.

Table 18: High School Attendance Choice of Male and Female Teens: Educated versus Less Educated Fathers

Dependent Variable	High School Attendance Decision			
	Youth Respondent		Mother Respondent	
	Boys	Girls	Boys	Girls
Expected Return - Sr HS	0.011 (0.217)	-0.033 (0.190)	0.186 (0.238)	-0.250 (0.263)
Expected Return - College	0.212 (0.175)	0.370** (0.184)	-0.013 (0.237)	-0.271 (0.235)
Prob of Work - Jr HS	0.009 (0.390)	-0.218 (0.350)	0.539 (0.436)	-0.812* (0.463)
Prob of Work - Sr HS	-0.138 (0.528)	-0.036 (0.461)	-0.407 (0.625)	-0.313 (0.567)
Prob of Work - College	0.675 (0.412)	-0.087 (0.476)	0.706 (0.578)	1.117** (0.533)
Sex Ratio (Jr HS)	0.008 (0.099)	0.574** (0.284)	-0.266** (0.117)	0.397 (0.291)
Expected Return Sr HS * Father Educated	-0.083 (0.473)	1.276** (0.586)	1.384 (1.012)	0.872 (0.905)
Expected Return College * Father Educated	0.375 (0.526)	-0.465 (0.513)	-1.103 (0.708)	0.295 (0.646)
Prob of Work Jr HS * Father Educated	0.750 (1.130)	1.297 (0.864)	-0.885 (1.212)	-0.775 (1.621)
Prob of Work Sr HS * Father Educated	0.387 (1.373)	0.536 (1.254)	-2.665 (1.729)	2.320 (2.454)
Prob of Work College * Father Educated	-1.006 (1.054)	-1.157 (1.256)	2.869* (1.528)	-0.373 (1.533)
Sex Ratio (Jr HS) * Father Educated	-0.433 (0.487)	-0.148 (0.618)	0.453 (0.450)	-0.411 (0.592)
Number of Male Siblings	-0.138*** (0.051)	-0.097** (0.047)	0.055 (0.058)	0.004 (0.063)
Number of Female Siblings	-0.121** (0.051)	-0.065 (0.048)	-0.122** (0.054)	0.028 (0.055)
GPA of Jr HS (0-100)	0.025*** (0.007)	0.036*** (0.008)	0.028*** (0.007)	0.025*** (0.007)
Mother's Educ - Jr HS	0.252 (0.167)	0.396** (0.169)	0.351* (0.196)	0.425* (0.223)
Observations	2364		2364	
Censored Obs	967		1397	
Log Likelihood	-1973.680		-1818.127	
Sample Sel: Corr of Errors (P-Val)	-0.631 (0.017)		0.563 (0.138)	

Notes: Table displays coefficients and standard errors in brackets. * p<0.1 ** p<0.05 *** p<0.01. Excl. categories: male, size of locality less than 15k, mother's and father's education primary or less, per capita income less than 5000 pesos. All specifications include state dummies.

Appendix B: Robustness Checks

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

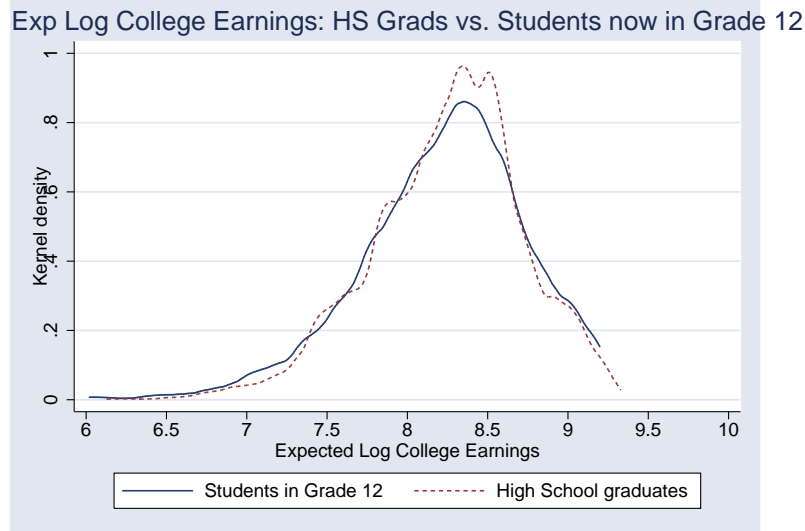
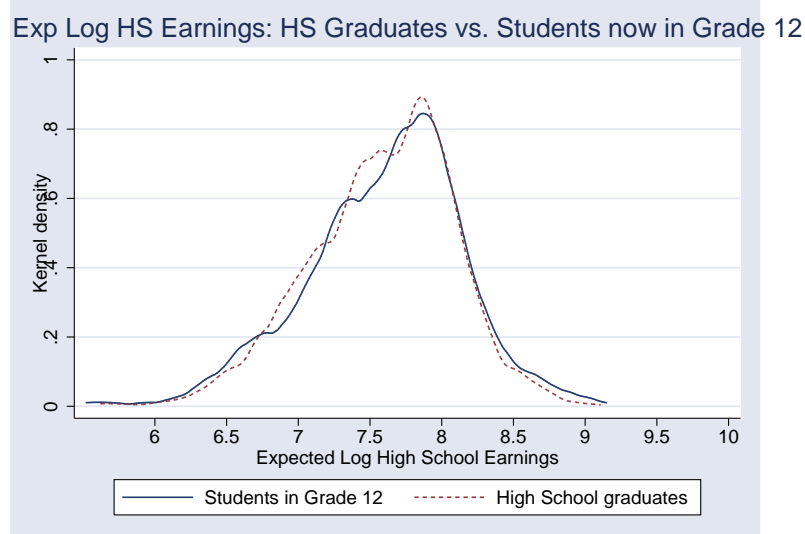


Figure 2: Comparing Expectations of High School Graduates with a One-Year Younger Cohort



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.⁹ 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.

⁹It 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 19: 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)	Marg Eff/(SE)	Marg Eff/(SE)
Interview Sunday	0.166** (0.079)	0.140* (0.085)	0.013 (0.097)	0.030 (0.096)
Interview Thursday	-0.032 (0.054)	-0.064 (0.056)	-0.094* (0.053)	-0.102* (0.055)
Interview Sunday*Aftern.	-0.063 (0.124)	-0.046 (0.130)	0.239** (0.096)	0.168 (0.115)
Interview Sunday*Even.	-0.029 (0.330)	0.002 (0.368)	0.293* (0.161)	0.305** (0.146)
Interview Wednesday*Even.	0.195* (0.106)	0.159 (0.113)	0.126 (0.113)	0.121 (0.119)
Interview Thursday*Even.	0.141 (0.108)	0.167 (0.110)	0.214** (0.095)	0.240*** (0.091)
Interview Friday*Even.	0.147 (0.120)	0.272*** (0.101)	-0.156 (0.143)	-0.196 (0.146)
Interview Saturday*Even.	0.254* (0.134)	0.278** (0.132)	0.088 (0.149)	0.034 (0.161)
Interview Week 40	0.083 (0.092)	0.124 (0.093)	0.111 (0.079)	0.157** (0.075)
Interview Week 41	0.177*** (0.037)	0.211*** (0.038)	0.182*** (0.033)	0.209*** (0.034)
Interview Week 42	0.158*** (0.034)	0.180*** (0.035)	0.124*** (0.032)	0.123*** (0.033)
Interview Week 45	-0.152*** (0.039)	-0.166*** (0.041)	-0.148*** (0.038)	-0.141*** (0.040)
Interview Week 46	-0.358*** (0.051)	-0.321*** (0.059)	-0.214*** (0.058)	-0.203*** (0.062)
Ratio Unmarried Men to Women (At Least Jun HS)		0.079*** (0.021)		0.029* (0.017)
Single		-0.178 (0.128)		-0.192** (0.090)
Height		0.000 (0.002)		-0.005*** (0.002)
Overweight		-0.081* (0.044)		-0.054 (0.040)
Obese		0.274*** (0.074)		-0.105 (0.078)
GPA of Junior HS (0-100)		-0.003* (0.001)		-0.002 (0.001)
Mother's Educ - Sr HS		0.071 (0.092)		0.200*** (0.070)
Father's Educ - Univ		-0.083 (0.186)		-0.251** (0.127)
Per cap Income - more than 10k		0.037 (0.036)		0.076** (0.032)
Father's Occup - Employee		0.057* (0.031)		-0.020 (0.029)
Father's Occup - Self-Empl.		-0.100*** (0.038)		-0.044 (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 20: 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)	Marg Eff/(SE)	Marg Eff/(SE)
Interview Wednesday	0.053 (0.063)	0.039 (0.066)	-0.100* (0.058)	-0.122** (0.060)
Interview Thursday*Aftern.	0.113* (0.066)	0.076 (0.068)	0.041 (0.064)	-0.002 (0.067)
Interview Friday*Aftern.	0.048 (0.073)	0.024 (0.076)	0.109* (0.066)	0.089 (0.070)
Interview Saturday*Aftern.	0.181** (0.088)	0.166* (0.092)	0.070 (0.077)	0.050 (0.080)
Interview Sunday*Even.	-0.354*** (0.106)	-0.331*** (0.123)	0.218 (0.223)	0.181 (0.239)
Interview Tuesday*Even.	0.317*** (0.118)	0.304** (0.124)	-0.064 (0.147)	-0.036 (0.155)
Interview Saturday*Even.	0.074 (0.203)	0.077 (0.208)	0.382*** (0.076)	0.411*** (0.059)
Interview Week 40	0.208** (0.106)	0.216** (0.107)	0.067 (0.085)	0.064 (0.086)
Interview Week 41	0.109** (0.051)	0.170*** (0.052)	0.137*** (0.046)	0.171*** (0.046)
Interview Week 42	0.084* (0.046)	0.096** (0.048)	0.151*** (0.040)	0.155*** (0.041)
Single		-0.159* (0.092)		-0.315*** (0.062)
Height		-0.001 (0.002)		-0.006*** (0.002)
Underweight		0.067 (0.052)		-0.089* (0.046)
GPA of Junior HS (0-100)		-0.006*** (0.002)		0.000 (0.001)
Mother's Educ - Univ		0.348* (0.179)		
Father's Educ - Univ		-0.161 (0.150)		-0.250* (0.143)
Father's Occup - Employee		0.095** (0.040)		0.051 (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.