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Why Students Want to Pursue Further Education**

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## **ABSTRACT**

### **Money or Fun? Why Students Want to Pursue Further Education\***

We study students' motives for educational attainment in a unique survey of 885 secondary school students in the UK. As expected, students who perceive the monetary returns to education to be higher are more likely to intend to continue in full-time education. However, the main driver is the perceived consumption value, which alone explains around half of the variation of the intention to pursue higher education. Moreover, the perceived consumption value can account for a substantial part of both the socio-economic gap and the gender gap in intentions to continue in full-time education.

JEL Classification: I24, I26, J13, J24, J62

Keywords: education, perceived returns, consumption value of education, beliefs, higher education, UK, gender gap, income gradient

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# 1 Introduction

Traditional models of human capital view education as an investment where the financial and opportunity costs of education are compared to the discounted stream of expected future benefits, primarily in the form of increased future earnings. While the investment value of education has been the primary focus of most of the theoretical and empirical literature, early theoretical work emphasizes the importance of the consumption value of education in individual schooling decisions (Lazear 1977, Kodde and Ritzen 1984).<sup>1</sup> The consumption value of education consists of different non-pecuniary benefits and costs associated with being in full-time education such as the (dis)utility from acquiring new skills, experiencing new things and places, socializing with new people, or participating in social events and student activities. While recent work has established the importance of individual beliefs about the pecuniary returns to education in educational investment decisions (e.g. Jensen 2010; Attanasio and Kaufmann 2014; Kaufmann 2014), not much is known about whether individuals differ in their beliefs about the consumption value of education, and whether this difference is systematic, e.g. whether beliefs differ by socio-economic group or by gender.

The recent empirical literature provides indirect evidence that the consumption value or ‘psychic cost’ of education plays a very important role in students’ schooling decisions (e.g. Cunha, Heckman and Navarro 2005; Heckman, Lochner and Todd 2006; Cunha, Heckman and Navarro 2006; Cunha and Heckman 2007, 2008; Carneiro, Heckman and Vytlačil 2011). This literature infers the consumption value or ‘psychic cost’ of education by comparing actual choice data to what would have been ‘payoff-maximizing’. However, without measures of individual beliefs about the returns to education as well as measures of individual beliefs about the consumption value of education, all these factors enter the residual jointly. Having separate measures for beliefs about monetary returns and the consumption value would allow us to gain a better understanding of what lies within the catch-all-term ‘psychic costs’.

In this paper, we aim to fill this gap in the literature. For this purpose, we survey 885 students in Year 9 of secondary school in the UK (ages 13-14). In addition to collecting detailed information on students’ plans for the future, we elicit students’ beliefs about the pecuniary returns to further education as well as students’ beliefs about the consumption value of further education. This allows us to investigate to what extent individual beliefs about the pecuniary benefits as well as the non-

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<sup>1</sup>Oreopoulos and Salvanes (2011) document many non-pecuniary returns to higher education, though focusing on benefits accruing after attending university.

pecuniary benefits of education play a role in students' educational investment decisions. We focus on the two critical educational investment decisions students in the UK need to make. After six years of primary school education (ages 5-11), there are five years of compulsory secondary school education (ages 11-16), which at the end of Year 11 lead to GCSE qualifications. After Year 11, students need to make their first important educational decision. They can either opt to remain in school for an additional two-year period, which is commonly referred to as 'sixth form' (ages 16-18), or they can decide to leave school.<sup>2</sup> These two additional years of schooling typically lead to A-level qualifications (similar to a high school diploma in the US). Once students have obtained their A-level qualifications, they are faced with the second important decision; they need to decide whether to go to university or not. Given the importance of these two educational decisions for students' later-life outcomes, it is crucial to understand what drives these important decisions. Understanding what drives individual decisions to stay in further education is also particularly important as it is well documented that in the UK children from richer households are significantly more likely to attend higher education than children from poorer households (e.g. Blanden and Gregg 2004; Blanden and Machin 2004). For a policy-maker interested in addressing equality of opportunity, understanding how students make their educational decisions is hence a prerequisite to understand the origins of the intergenerational persistence of educational attainment and earnings.

To elicit beliefs about the pecuniary returns to further education, we present students with hypothetical investment scenarios and ask students to state what they believe the likely outcome of each scenario to be. By comparing individual responses across scenarios, we can infer how students perceive the returns to further education. Hypothetical investment scenarios have been successfully used to elicit beliefs about the returns to educational investments (e.g. Cunha, Elo and Culhane 2013; Attanasio and Kaufmann 2014; Boneva and Rauh 2015). We separately elicit students' beliefs about the returns to going to sixth form and students' beliefs about the returns to going to university. To elicit students' beliefs about the consumption value of further education, we separately ask students to state how likely they think it is that they would enjoy going to sixth form and how likely it is that they would enjoy going to university.

Consistent with the results in the existing literature, which investigates the role of perceived pecuniary returns in educational investment decisions (e.g. Jensen 2010; Attanasio and Kaufmann 2014;

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<sup>2</sup>If students decide to leave school after Year 11, they are still required to engage in some training activities until the age of 18 (e.g. in the form of apprenticeships or traineeships) but these other forms of training typically do not lead to A-level qualifications that would allow students to apply to university.

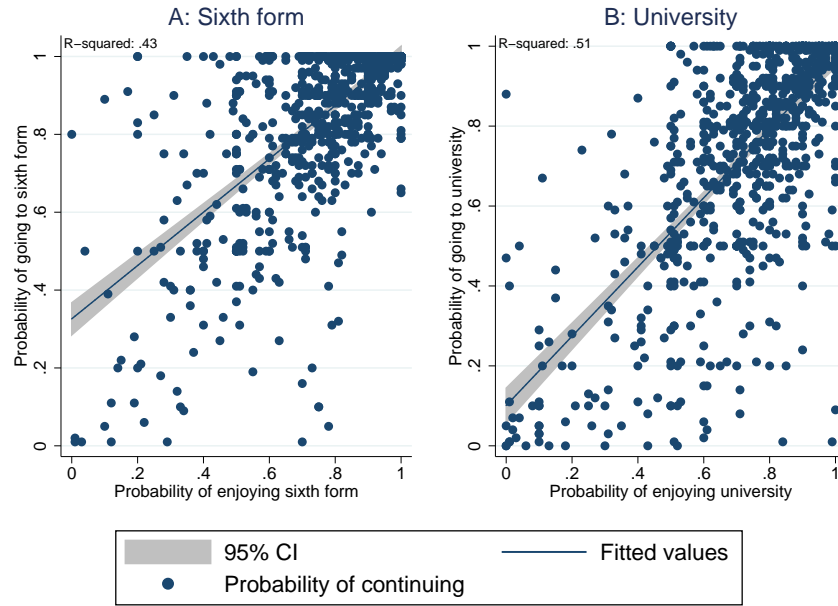
Kaufmann 2014), we find that individual beliefs about the returns to further education significantly predict whether students plan to continue in full-time education. The higher the perceived monetary return to sixth form, the more likely students think it is that they will go to sixth form if they get the necessary grades in Year 11. Similarly, the higher the perceived monetary return to university, the more likely students think it is that they will go to university if they get the necessary grades in sixth form. Interestingly, we find that the perceived return to university also predicts whether students plan to go to sixth form, over and above the effect of the perceived return to sixth form. This result suggests that students take the dynamic nature of the sequential decision problem into account when making their educational investment decisions.

However, we show that the perceived consumption value of education is considerably more important than perceived pecuniary returns in explaining students plan to stay in full-time education. The more likely students believe it is that they will enjoy sixth form, the more likely they are to plan to go to sixth form. Similarly, the more likely students believe it is that they will enjoy university, the more likely they plan to go to university, and consistent with the results above, we also find that the perceived consumption value of university predicts whether students plan to go to sixth form, over and above what can be predicted by the perceived consumption value of sixth form alone. In fact, we find that individual differences in the perceived consumption value *alone* can explain 43% and 51% of the variation in responses for sixth form and university, respectively (see Figure 1). In contrast, controlling for the perceived pecuniary returns to education only leads to a modest increase in the  $R^2$  of the regressions.

In accordance with the literature that uses indirect inference methods to obtain an estimate of the consumption value or ‘psychic cost’ of education (e.g. Cunha, Heckman and Navarro 2005), we find direct evidence for a positive association between the (perceived) consumption value of education and the socio-economic background of an individual. In particular, students from high socio-economic status (SES) families are significantly more likely to believe that they would enjoy continuing in full-time education.

When we investigate whether students plan to continue in full-time education if they get the requisite grades, we find that controlling for the perceived consumption value of further education can explain a substantial part of the socio-economic gap in responses. Once we control for the perceived consumption value of university, we no longer find an income gradient in whether students plan to go to university if they get the requisite grades in sixth form. We also find that individual beliefs about

Figure 1: Perceived Consumption Value and Perceived Probability of Continuing in Education



Note: Panel A plots the perceived probability of going to sixth form (conditional on getting the grades to go to sixth form) against individual perceptions of how likely it is that they will enjoy sixth form. Panel B plots the perceived probability of going to university (conditional on getting the grades to go to university) against individual perceptions of how likely it is that they will enjoy university.

the pecuniary returns to education differ across socio-economic groups, and that controlling for these differences also reduces some of the socio-economic gap in responses.

Further, we also find evidence of a large gender gap in the perceived consumption value. The gender gap in university attendance has increased markedly over recent decades (Machin and McNally 2005, Goldin, Katz and Kuziemko 2006, Vincent-Lancrin 2008, Fortin, Oreopoulos and Phipps 2015). Recent statistics show that males in the UK are less likely to apply to higher education than females are likely to enter (UCAS 2014). We find that controlling for the perceived consumption value of university eliminates the effect of gender on the intention to go to university, highlighting one possible channel through which the gender gap arises.

Finally, we document that the perceived consumption value is positively correlated with a proxy of individual ability or aptitude, indicating that students who perceive their academic ability as lower are also less likely to report that they would enjoy further education. We find that when we control for the proxy of individual ability, the perceived consumption value is still highly predictive of students' plans to stay in further education. The magnitudes of the coefficients are still large, albeit muted, as

one would expect. Overall, the results provide suggestive evidence that differences in perceived ability levels can account for some of the differences in the perceived consumption value, but that it is likely that there are also other important differences in beliefs about non-pecuniary benefits or costs that play an important role.

The results of this paper raise important policy-relevant questions. While traditional policies have focused on increasing university enrolment by alleviating credit constraints, our results suggest that policy interventions which make the pecuniary and non-pecuniary benefits of further education more salient might have the potential of increasing enrolment in higher education, especially among low SES students. Causal evidence is needed to understand whether such interventions can indeed encourage students who have the potential to succeed in further education to also apply to further education. To effectively design informational interventions, more research will be needed on which non-pecuniary benefits are most relevant to students, and whether students from different socio-economic groups only differ in their *perceptions* of the consumption value of further education or whether the non-pecuniary benefits that accrue really differ with the students' socio-economic background characteristics.

This study contributes to several different strands of the literature. First, it contributes to the literature which investigates the role of individual beliefs about the pecuniary returns to education in explaining educational attainment. While traditional theories have largely neglected the role of individual perceived returns (e.g. Becker 1964), the recent literature has documented that beliefs about returns are important determinants of individual schooling decisions. Attanasio and Kaufmann (2014) and Kaufmann (2014) provide evidence that students' expected returns are an important predictor of students' decisions to continue in formal education. Jensen (2010) shows that the perceived returns to schooling can differ from actual measured returns and that an intervention which informs students about actual returns increases the number of years students spend in formal schooling. We contribute to this literature by documenting how student beliefs about the pecuniary returns to education play a role in sequential schooling decisions, which have been the focus of recent empirical work (e.g. Stange 2012; Heckman, Humphries and Veramendi 2016). We show that when students decide whether to go to sixth form, both the perceived benefits to sixth form as well as the perceived benefits to university play an important role, indicating that students take the option value of sixth form education into account.

While we study the decision *whether* to obtain further education, our study also relates to the literature which investigates the role of individual beliefs about pecuniary and non-pecuniary benefits



in explaining students' choice of major (Montmarquette, Cannings and Mahseredjian 2002; Arcidiacono 2004; Arcidiacono, Hotz and Kang 2012; Beffy, Fougere and Maurel 2012; Zafar 2013; Stinebrickner and Stinebrickner 2014; Wiswall and Zafar 2015; Giustinelli 2016) and students' choice of which specific university to attend (Delavande and Zafar 2014). It also relates to the recent literature on how universities attract students by providing additional services and amenities surrounding student life. Jacob, McCall and Stange (2013) find that colleges in the US have been increasing expenditures on consumption amenities, such as student activities, sports, and dormitories, due to demand-side pressures. Pope and Pope (2009) show that colleges receive more applications after successful basketball and football seasons, while Alter and Reback (2014) provide evidence that the number of applications increases after improvements in a widely published quality-of-life ranking.

This paper proceeds as follows: Section 2 presents a theoretical framework which incorporates the investment value as well as the consumption value of education into a sequential model of educational choice and describes the survey design. Section 3 presents the characteristics of the data, while Section 4 presents the results of the analysis. Section 5 provides a discussion of the findings and supplementary evidence, while Section 6 concludes.

## 2 Methodology

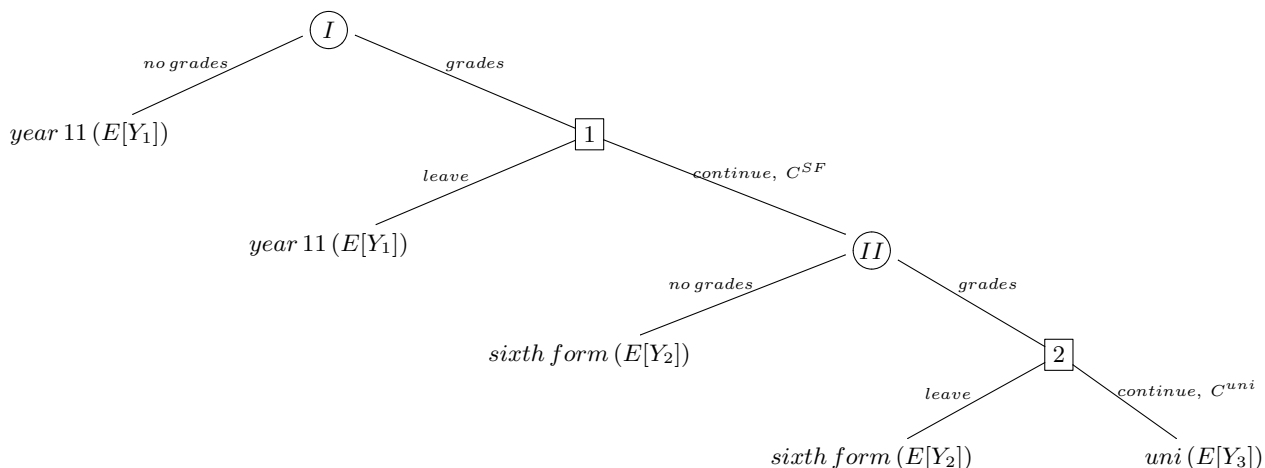
### 2.1 Theoretical Framework

Consider a multistage sequential model of education with transitions and nodes shown in Figure 2. Let  $S \in \{s_1, s_2, s_3\}$  denote the set of possible terminal states. In particular, students can either drop out after year 11 ( $s_1$ ), go to sixth form but not to university ( $s_2$ ), or go to university ( $s_3$ ). There are two decision nodes,  $j \in \{1, 2\}$ . At each decision node  $j$  the student can either decide to continue in full-time education or leave full-time education. In addition, there are two state-of-nature nodes,  $k \in \{I, II\}$ . At each state-of-nature node  $k$ , the student can either get the grades which are necessary to proceed to the next decision node or not.<sup>3</sup>

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<sup>3</sup>In this stylized model, we abstract from the fact that effort provision is likely to be endogenous and we focus our empirical analysis on students' beliefs about whether they would continue to full-time education or not if they got the grades.

Figure 2: A Multistage Dynamic Education Problem



For each student  $i$ , we denote the individual probability of getting a job in each terminal state as  $p_i \in \{p_{1i}, p_{2i}, p_{3i}\}$  and individual earnings conditional on having a job as  $Y_i \in \{Y_{1i}, Y_{2i}, Y_{3i}\}$ .<sup>4</sup> Expected earnings,  $E[Y_i] \in \{E[Y_{1i}], E[Y_{2i}], E[Y_{3i}]\}$ , which are associated with each terminal state are the product of the individual probability of getting a job and individual earnings in that state,  $E[Y_i] = p_i Y_i$ . More specifically, let  $E[Y_{1i}]$  be the expected earnings of student  $i$  if the student does not continue in full-time education after year 11,  $E[Y_{2i}]$  the expected earnings of the student if the student goes to sixth form but not to university, and  $E[Y_{3i}]$  the expected earnings of the student if the student goes to sixth form and to university. Moreover, if a student decides to pursue further education at decision node  $j$  a consumption value is realized which reflects how much the student enjoys being in full-time education. We denote the consumption value of going to sixth form as  $C_i^{SF}$  and the consumption value of going to university as  $C_i^{uni}$ .

The sequence of realizations and decisions in this multistage model of education is as follows. At the end of year 11, the student is in the state-of-nature node  $k = I$ . In node  $k = I$ , the student can either obtain the necessary grades to continue in full-time education or not. If the student does not obtain the grades to stay in full-time education, then the student leaves full-time education after year 11, and the expected earnings which are associated with the terminal node are  $E[Y_{1i}]$ . If instead the student does obtain the grades to stay in full-time education, then the student transits to decision node

<sup>4</sup>Note that we do not have information on students' beliefs about the variance in earnings (conditional on having a job). We therefore treat individual earnings conditional on having a job as deterministic both in the model as well as in the analysis.

$j = 1$ . In decision node  $j = 1$ , the student needs to decide whether to continue in full-time education or not. If the student decides to leave full-time education (despite getting the grades), then again the expected earnings associated with the terminal node are  $E[Y_{1i}]$ . If instead the student chooses to continue in full-time education, then the consumption value  $C_i^{SF}$  is realized and the student transits to the state-of-nature node  $k = II$ . In node  $k = II$ , the student either obtains the grades which are necessary to continue to university or not. If the student does not obtain the grades, then the student leaves full-time education after sixth form and the expected earnings are  $E[Y_{2i}]$ . If instead the student does obtain the grades to continue to university, the student transits to decision node  $j = 2$ , and needs to decide whether to go to university or not. If the student decides to go to university, then the consumption value  $C_i^{uni}$  is realized and the expected earnings associated with the terminal node are  $E[Y_{3i}]$ . If instead the student decides to leave full-time education after sixth form, then the expected earnings are  $E[Y_{2i}]$ .

Next we examine the decision problem student  $i$  faces in each of the two decision nodes, starting from decision node  $j = 2$ .<sup>5</sup> We expect the student to go to university if the perceived benefits from going to university exceed the costs.<sup>6</sup> We distinguish between two different types of perceived benefits: (i) the perceived (pecuniary) returns to going to university,  $R_i^{uni} = \frac{E[Y_{3i}]}{E[Y_{2i}]} - 1$ , and (ii) the perceived consumption value that realizes if the student chooses to go to university,  $C_i^{uni}$ . We expect students to be more likely to go to university, the higher the perceived return to going to university,  $R_i^{uni}$ , and the higher the perceived consumption value of going to university,  $C_i^{uni}$ .

We now turn to the student's decision problem in node  $j = 1$ . If the student decides to stay in full-time education after year 11, there are two possible terminal nodes the student can reach. Either the student goes to sixth form but not to university, or the student goes to sixth form *and* to university. If the student goes to sixth form but not to university, then the consumption value  $C^{SF}$  is realized and the expected earnings associated with the terminal node are  $E[Y_{2i}]$ . In this case, the pecuniary returns to going to sixth form are  $R_i^{SF} = \frac{E[Y_{2i}]}{E[Y_{1i}]} - 1$ . If instead the student goes to sixth form *and* to university, then both consumption values  $C^{SF}$  and  $C^{uni}$  are realized, and the expected earnings associated with this terminal node are  $E[Y_{3i}]$ . Let  $\pi_i$  denote the probability that a student who decides to continue in full-time education at decision node  $j = 1$  not only goes to sixth form but also to university.<sup>7</sup> Taking

<sup>5</sup>Note that we do not allow students to update their beliefs as they move through the educational system. All beliefs are formed when the student is in decision node 1.

<sup>6</sup>This is equivalent to a model in which students compare the utility associated with different educational options and choose the one which yields the highest utility under the assumption that students are risk neutral.

<sup>7</sup>Note that  $\pi_i$  can be written as the product of the conditional probability of getting the grades at the end of sixth form and the conditional probability of actually going to university in decision node  $j = 2$ .

the continuation value of going to sixth form into account, the total pecuniary return to going to sixth form,  $PR_i^{SF}$ , can be written as:

$$PR_i^{SF} = R_i^{SF} + \pi_i R_i^{uni}$$

where the second term is the continuation value, which is the product of the probability of going to university (after having gone to sixth form) and the return to going to university,  $R_i^{uni}$ .

We expect students to go to sixth form if the perceived benefits of going to sixth form exceed the costs. Given the sequential nature of the decision problem, going to sixth form opens up educational options at later stages. Therefore, when deciding whether to continue in full-time education after year 11, students not only need to take into account the benefit of going to sixth form but also the additional benefit arising from access to education beyond sixth form. In particular, we expect students to be more likely to go to sixth form, the higher the perceived return to going to sixth form,  $R_i^{SF}$ , the higher the perceived return to going to university,  $R_i^{uni}$ , the higher the perceived consumption value of sixth form,  $C_i^{SF}$ , and the higher the perceived consumption value of university,  $C_i^{uni}$ .<sup>8</sup>

## 2.2 Elicitation of Beliefs

To gain a better understanding of how students make educational choices, we elicit student beliefs, guided by the theoretical framework, in three steps.<sup>9</sup> First, we elicit student beliefs about four different conditional probabilities. In particular, we ask students to state how likely they think it is that they will (i) get the grades in year 11 to continue to sixth form, (ii) go to sixth form if they get the grades in year 11, (iii) get the grades in sixth form to continue to university, and (iv) go to university if they get the grades in sixth form.<sup>10</sup> Second, we elicit students' beliefs about the potential outcomes in the terminal states, which allow us to calculate the perceived returns to staying in full-time education.<sup>11</sup> In particular, we ask students to state how likely they think it is that they will have a job at the age of 25 and what they expect their earnings to be at the age of 25 (i) if they do not continue in full-time

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<sup>8</sup>We also expect students to be more likely to go to sixth form the more likely they think it is that they would also go to university, i.e. the higher  $\pi_i$ . In the regression analyses, we do not include this probability on the right-hand side of the regressions because individual effort and hence  $\pi_i$  is likely to be itself affected by individual beliefs about returns to education.

<sup>9</sup>The questionnaire we designed to elicit student beliefs can be found in Appendix B.

<sup>10</sup>Though we have no information on final real choices, there is a substantial amount of evidence that stated expected choices are highly predictive of subsequent actual choices, and that subjective probabilistic beliefs contain meaningful information (e.g., Delavande and Manski 2010; Zafar 2011).

<sup>11</sup>Dominicz and Manski (1996) document that students are able to respond to probabilistic questions about expected future earnings in a meaningful manner.

education after year 11, (ii) if they go to sixth form but not to university, and (iii) if they go to sixth form and to university.<sup>12</sup> These responses allow us to calculate individual perceived returns to sixth form,  $R_i^{SF}$ , as well as individual perceived returns to university,  $R_i^{uni}$ . Finally, we ask students to state how likely they think it is that they would enjoy going to (i) sixth form, and (ii) university. We ask students to indicate their responses on a 0 to 100 scale. We use the responses to these questions as measures of the individual perceived consumption values of further education,  $C_i^{SF}$  and  $C_i^{uni}$ .<sup>13</sup>

## 3 The Data

### 3.1 The Sample

Our sample consists of 885 students who were in year 9 at the time of the survey.<sup>14</sup> The characteristics of the sample are reported in Table 1. The students in our sample are on average 13.8 years old and 45% are female. 46% have at least one parent who holds a university degree, while 21% are raised in single parent households. The average number of children in the household is 2.53. On average, total household income is £34,877.

We also have information on the students' time and risk preferences. To elicit students' time and risk preferences, we administer two questions which ask students to state how patient and how risk loving they are in general on a scale from 0 to 10 (see Appendix B). These qualitative measures of time and risk preferences have been shown to predict behavior in incentivized experiments (Dohmen et al. 2011; Vischer et al. 2013; Vieider et al. 2015; Falk et al. 2016), and they have been administered and used successfully in large representative samples in the past (e.g. Dohmen et al. 2012; Falk et al. 2015). In our sample, the average response to the patience question is 7.14, while the average response to the risk question is 7.21.

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<sup>12</sup>While different educational decisions are likely to manifest themselves in different levels of lifetime earnings, we chose to ask students about their expected earnings at a specific point in time (rather than about their expected lifetime earnings) because this question is more intuitive and easy to understand. Moreover, students might find it more difficult to imagine their future earnings at a point in time too distant in the future, which is why we chose to ask students about their expected earnings at age 25 and not at an older age.

<sup>13</sup>We chose to ask students about the probability that they would enjoy further education rather than how much they would enjoy further education because the former has an interpretable metric.

<sup>14</sup>The survey was conducted online in 2013 and it was administered by a professional survey company. The students who participated in this survey were children of the company's online panel members who agreed to participate in this study. To increase the reliability of household level information, all household level variables (e.g. household income) were reported by parents.

Table 1: Descriptive Statistics of Sample

	Mean	[SD]
Age of student	13.8	[0.56]
Female student	0.45	[0.50]
Patience	7.14	[2.23]
Risk	7.21	[2.05]
University (parent)	0.46	[0.50]
Single parent	0.21	[0.41]
Children in household	2.53	[1.40]
Household income	34877.49	[26099.18]
Observations	885	

Note: This table reports the mean and standard deviation of student characteristics such as gender and age, as well as self-reported patience and risk attitudes, and household characteristics such as whether at least one parent has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Household income refers to the household's total income, after tax and any other deductions.

Compared to a representative sample of households in the UK with at least one child aged 12-15, the parents of the children in our sample are somewhat better educated and they are less likely to be single parents. Figure C.1 in the Appendix shows the distribution of annual household income for households in our sample and households in the Family Resources Survey (FRS).<sup>15</sup>

### 3.2 Elicited Beliefs

Table 2 presents the average beliefs of the students in our sample. On average, the students in our sample believe that with a probability of 78% they will get the grades in year 11 to continue to sixth form.<sup>16</sup> Moreover, they believe that with a probability of 85% they will continue to sixth form if they get the grades in year 11, which are necessary to stay in full-time education. On average, the students believe that if they go to sixth form, the likelihood of them getting the grades in sixth form to go to university is 75%. Finally, students believe that with a probability of 73% they will go to university if they get the grades in sixth form which allow them to go to university.<sup>17</sup>

When we examine students' beliefs about the potential outcomes of each terminal state, we find

<sup>15</sup>We use the Family Resources Survey 2013-2014 to obtain the statistics for a representative sample of households in the UK. We restrict the sample to households with at least one child aged 5-19. The average annual household income in this sample is £37,668. 32% of the parents in the representative sample are single parents, and in 38% of the households there is at least one parent who holds a university degree.

<sup>16</sup>Note that while in the survey students were asked to indicate their response to all probability questions on a 0-100 scale, we normalize the variables to have a 0-1 scale for the purpose of the analysis.

<sup>17</sup>We can also calculate the unconditional probability of ending in a specific terminal node. When we calculate these unconditional probabilities for each respondent and average across respondents we find that the average unconditional probability of leaving education after year 11 is 30%, the average unconditional probability of going to sixth form but not to university is 24% and the average unconditional probability of going to university is 46%.

Table 2: Average Beliefs in Sample

	Mean	[SD]
<u>A: Perceived Conditional Probabilities</u>		
Get grades for sixth form	0.78	[0.19]
Go to sixth form	0.85	[0.21]
Get grades for university	0.75	[0.20]
Go to university	0.73	[0.27]
<u>B: Perceived Probability of Employment</u>		
Year 11	0.51	[0.30]
Sixth form	0.66	[0.25]
University	0.76	[0.23]
<u>C: Perceived Earnings</u>		
Year 11	20,292	[21,571]
Sixth form	21,568	[16,785]
University	28,562	[23,265]
<u>D: Perceived Consumption Value</u>		
Sixth form	0.77	[0.20]
University	0.73	[0.22]
Observations	885	

Note: This table reports the mean and standard deviation of student beliefs in our sample. Panel A shows the average responses to the questions that elicit the four conditional probabilities. Panel B presents the average beliefs about the probability of getting a job at age 25 for each of the three possible terminal states, while Panel C presents the average beliefs about potential earnings (conditional on having a job) in each possible terminal state. Panel D presents the average perceived consumption value of sixth form and university.

that on average students perceive the probability of getting a job at age 25 to be (i) 51% if they leave full-time education after year 11, (ii) 66% if they go to sixth form but not to university, and (iii) 76% if they go to both sixth form and university. Conditional on having a job, students expect their earnings at the age of 25 to be (i) £20,292 if they leave full-time education after year 11, (ii) £21,568 if they go to sixth form but not to university, and (iii) £28,562 if they go to both sixth form and to university. Using students' responses to these questions, we can calculate the perceived return to sixth form and the perceived return to university for each individual as described in the previous section.<sup>18</sup> Finally, Table 2 also shows students' responses to the two questions which ask students how likely they think it is they would enjoy going to sixth form and how likely they think it is they would enjoy going to university, which provides us with information on the perceived consumption values of further education. We find that the average response to the first question is 77%, while the average response to the second question is 73%.

<sup>18</sup>To ensure that the results of our analysis are not driven by outliers, we remove the bottom and top 1% of expected earnings and the bottom and top 5% of perceived returns.

## 4 Results

We begin our empirical investigation by documenting which student and household characteristics are predictive of the four different conditional probabilities we elicit. The results of this analysis are presented in Table 3.<sup>19</sup> In particular, the table shows which characteristics predict (i) the perceived probability of obtaining the grades in year 11 to go to sixth form (Column 1), (ii) the perceived probability of going to sixth form conditional on getting the grades (Column 2), (iii) the perceived probability of obtaining the grades in sixth form to go to university (Column 3), and (iv) the perceived probability of going to university conditional on getting the grades (Column 4).

First, we document which characteristics predict students' beliefs about whether they will get the grades at a given educational stage to proceed to the following educational stage (Columns 1 and 3). Female students as well as more patient and more risk loving students perceive the probability of getting the grades to be significantly higher, both at the end of year 11 as well as at the end of sixth form. The same is true for students who have at least one parent with a university degree. We also find evidence for an income gradient in individual responses. In particular, there seems to be a positive monotonic relationship between the household's income quartile and individual beliefs about the likelihood of obtaining the grades that are necessary to stay in full-time education, both at the end of year 11 as well as at the end of sixth form.

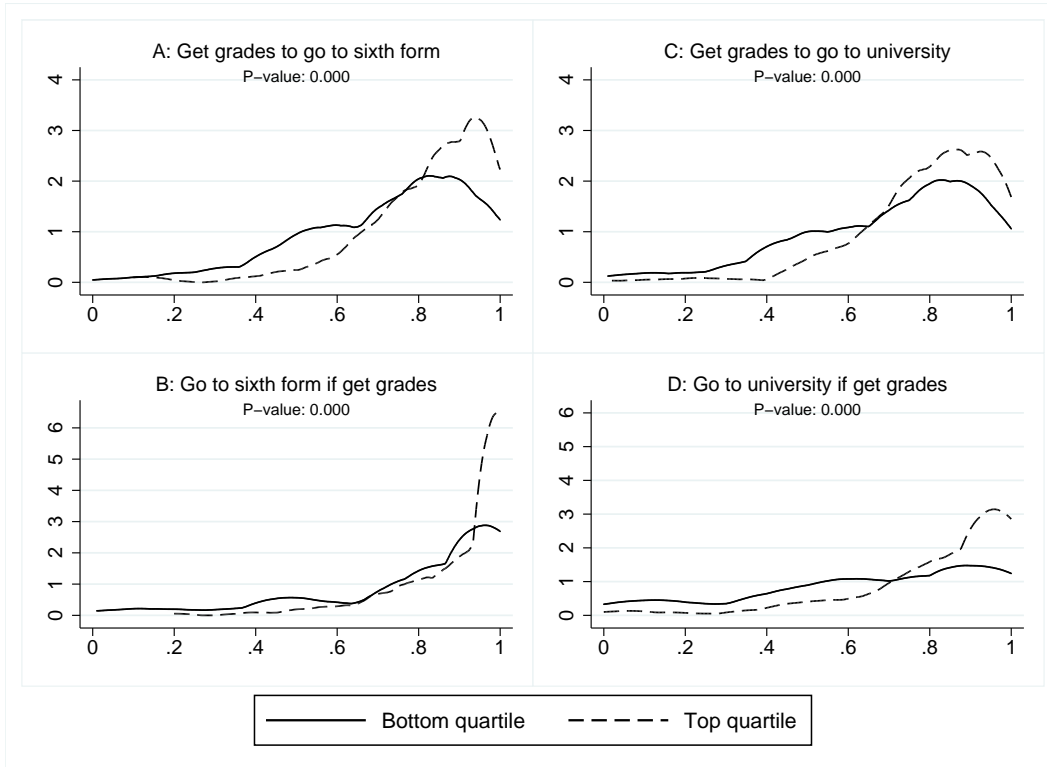
Next we investigate which characteristics predict students' beliefs about whether they would continue in full-time education if they got the grades (Columns 2 and 4). We find that female students as well as more patient students are more likely to believe that they would continue in full-time education if they got the required grades. We also find large and significant differences across socio-economic groups. More specifically, children who have at least one parent with a university degree perceive the probability of going to sixth form (conditional on getting the grades in year 11) to be 4.2 percentage points higher compared to children with less educated parents. Similarly, children with better educated parents perceive the probability of going to university (conditional on getting the grades in sixth form) to be 10.8 percentage points higher. Again we find evidence for an income gradient in individual responses. Compared to students in the bottom income quartile, students in the top income quartile perceive the probability of going to sixth form to be 8.2 percentage points higher, and they perceive the probability of going to university to be 10.1 percentage points higher.

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<sup>19</sup>For regressions with probabilities as a dependent variable we find no qualitative difference to the results in Tables 3, 4 and 5 when using a Tobit regression instead of OLS. The results are provided in Appendix A.



Figure 3: Perceived Conditional Probabilities by Parental Income Quartile



Note: The different panels depict the kernel densities of individual responses to the different questions that elicit individual beliefs about the four conditional probabilities: The probability of getting the grades in year 11 to go to sixth form (Panel A), the probability of going to sixth form conditional on getting the grades (Panel B), the probability of getting the grades in sixth form to go to university (Panel C), and the probability of going to university conditional on getting the grades. The densities are depicted for bottom and top income quartile respondents, respectively. Reported p-values are from Kolmogorov-Smirnov tests of equality of distributions.

Figure 3 depicts the kernel densities of individual responses to the four different conditional probability questions, separately for bottom and top income quartile respondents. We can see that in all four panels the density for top income quartile respondents is shifted to the right of the density for bottom income quartile respondents, and in all four cases the Kolmogorov-Smirnov test rejects the null of equality of distributions at the 1% level.

Do individual beliefs about the returns to education and individual beliefs about the consumption value of education predict how likely the students think it is that they would continue in full-time education if they got the grades? Table 4 shows the results of this analysis for the students' perceptions of how likely it is that they would go to sixth form. Column 1 reproduces the results presented in the previous table. Column 2 additionally controls for the perceived return to sixth form, while Column 3 also controls for the perceived return to university. The results in Column 3 reveal that

both the perceived return to sixth form as well as the perceived return to university significantly predict students' beliefs about how likely it is that they would go to sixth form if they got the grades. This suggests that when students make their educational decisions at the end of year 11 they take the dynamic nature of the decision problem into account. In Column 4 we control for the students' perceived consumption value of sixth form, while in Column 5 we additionally control for the students' perceived consumption value of university. Again we find that both the perceived consumption value of sixth form as well as the perceived consumption value of university are positive and highly significant. We note that while controlling for the perceived returns to education does not increase the  $R^2$  of the regression very much (from 0.11 to 0.16), controlling for individual perceptions of how enjoyable education is increases the  $R^2$  substantially from 0.11 to 0.47.

When we control for both the perceived returns and the perceived consumption values (Column 6), both the perceived returns as well as the perceived consumption values significantly predict how likely students think it is that they would go to sixth form if they got the grades. An increase in the perceived return to sixth form by 10 percentage points is associated with an increase of 0.09 percentage points, while an increase in the perceived return to university by 10 percentage points is associated with an increase of 0.19 percentage points. Moreover, a student who perceives the likelihood of sixth form being enjoyable to be 10 percentage points higher reports being 5.2 percentage points more likely to go to sixth form, while a student who perceives the likelihood of university being enjoyable to be 10 percentage points higher reports being 1.1 percentage point more likely to go to sixth form. The magnitude of the latter effect sizes is large, indicating that perceived consumption values are likely to play a major role in educational investment decisions.

Table 3: Predictors of Perceived Conditional Probabilities (0-1)

	Sixth Form		University	
	Grades for sixth form (1)	Go to sixth form (2)	Grades for university (3)	Go to university (4)
Female child	0.054*** (0.01)	0.059*** (0.01)	0.044*** (0.01)	0.071*** (0.02)
Age of child	0.010 (0.01)	0.013 (0.01)	0.011 (0.01)	0.023 (0.02)
Patience	0.017*** (0.00)	0.016*** (0.00)	0.016*** (0.00)	0.020*** (0.00)
Risk	0.009*** (0.00)	0.001 (0.00)	0.014*** (0.00)	0.014*** (0.00)
University (parent)	0.039*** (0.01)	0.042*** (0.02)	0.049*** (0.01)	0.108*** (0.02)
Single parent	0.046*** (0.02)	0.027 (0.02)	0.008 (0.02)	0.014 (0.02)
Children in HH	-0.005 (0.00)	-0.005 (0.00)	-0.009** (0.00)	-0.008 (0.01)
2nd income quartile	0.038** (0.02)	0.033* (0.02)	0.035** (0.02)	0.035 (0.02)
3rd income quartile	0.060*** (0.02)	0.041** (0.02)	0.039** (0.02)	0.039 (0.02)
4th income quartile	0.086*** (0.02)	0.082*** (0.02)	0.060*** (0.02)	0.101*** (0.03)
Region FE	Yes	Yes	Yes	Yes
R-Squared	0.15	0.11	0.15	0.16
Sample Mean	0.78	0.85	0.75	0.73
N	874	874	871	869

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variables are the four elicited conditional probabilities (0-1), respectively. More specifically, the dependent variables are (i) the perceived probability of obtaining the grades in year 11 to go to sixth form (Column 1), (ii) the perceived probability of going to sixth form conditional on getting the grades (Column 2), (iii) the perceived probability of obtaining the grades in sixth form to go to university (Column 3), and (iv) the perceived probability of going to university conditional on getting the grades (Column 4). Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income.

Table 4: Predictors of Perceived Probability of Going to Sixth Form (0-1)

Dependent variable: Conditional Probability of Going to Sixth Form						
	(1)	(2)	(3)	(4)	(5)	(6)
Female child	0.059*** (0.01)	0.053*** (0.01)	0.047*** (0.01)	0.022** (0.01)	0.019* (0.01)	0.017 (0.01)
Age of child	0.013 (0.01)	0.012 (0.01)	0.014 (0.01)	0.003 (0.01)	0.004 (0.01)	0.012 (0.01)
Patience	0.016*** (0.00)	0.016*** (0.00)	0.015*** (0.00)	0.002 (0.00)	0.000 (0.00)	0.002 (0.00)
Risk	0.001 (0.00)	0.005 (0.00)	0.005 (0.00)	-0.003 (0.00)	-0.005* (0.00)	-0.002 (0.00)
University (parent)	0.042*** (0.02)	0.029* (0.02)	0.022 (0.02)	0.021* (0.01)	0.015 (0.01)	0.013 (0.01)
Single parent	0.027 (0.02)	0.013 (0.02)	0.011 (0.02)	0.019 (0.01)	0.013 (0.01)	0.005 (0.01)
Children in HH	-0.005 (0.00)	-0.007 (0.01)	-0.006 (0.01)	0.004 (0.00)	0.004 (0.00)	0.002 (0.00)
2nd income quartile	0.033* (0.02)	0.017 (0.02)	0.021 (0.02)	0.013 (0.01)	0.013 (0.01)	0.011 (0.02)
3rd income quartile	0.041** (0.02)	0.048** (0.02)	0.055*** (0.02)	0.031** (0.02)	0.026* (0.01)	0.048*** (0.02)
4th income quartile	0.082*** (0.02)	0.070*** (0.02)	0.070*** (0.02)	0.050*** (0.02)	0.042** (0.02)	0.044** (0.02)
Perceived return (sixth form)		0.012*** (0.00)	0.010*** (0.00)			0.009*** (0.00)
Perceived return (university)			0.033*** (0.01)			0.019*** (0.01)
Consumption value (sixth form)				0.660*** (0.03)	0.582*** (0.03)	0.523*** (0.04)
Consumption value (university)					0.126*** (0.03)	0.107*** (0.04)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.11	0.14	0.16	0.46	0.47	0.45
Sample Mean	0.85	0.85	0.85	0.85	0.85	0.85
N	874	740	692	872	867	689

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variable is the perceived probability of going to sixth form conditional on getting the grades in year 11 to go to sixth form. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived returns to and the perceived consumption values of sixth form and university.

Next we investigate whether individual beliefs about the returns to university and individual beliefs about the consumption value of university predict whether students would go to university if they got the grades in sixth form. The results of this analysis are presented in Table 5. Column 1 reproduces the results in Table 3. Column 2 controls for the perceived return to university, while Column 3 controls for the perceived consumption value of university. Column 4 includes both of these controls into the same regression. Focusing on the results in Column 4 we find that both the perceived return as well as the perceived consumption value significantly predict student responses. In particular, an increase in the perceived return to university by 10 percentage points is associated with an increase in the perceived probability of going to university of 0.2 percentage points. Moreover, a student who reports a 10 percentage point higher likelihood of enjoying university, reports being 8.3 percentage points more likely to go to university. Again we note that while controlling for the perceived return only leads to a modest increase in the  $R^2$  of the regression (from 0.16 to 0.18), controlling for the perceived consumption value increases the  $R^2$  substantially from 0.16 to 0.53.

An additional finding which is worth noting is that in the analyses presented in Tables 4 and 5, controlling for perceived returns or perceived consumption values significantly alters some of the point estimates of the socio-economic background characteristics. We find particularly large differences in the estimated coefficients when we control for the perceived consumption values. In particular, when controlling for the perceived consumption values in Table 4 (Column 5), the estimated coefficient on whether one of the parents holds a university degree is close to zero and no longer statistically significant, and the estimated coefficient is significantly different from the estimated coefficient in Column 1 (at the 1% level). The estimated income gradient is also significantly less steep in the regression in Column 5. Compared to students in the bottom income quartile, students in the top income quartile now perceive the likelihood of going to university to only be 4.2 percentage points higher (compared to 8.2 percentage points in Column 1). Again the null hypothesis that the two estimated coefficients in Columns 1 and 5 are equal is rejected at the 1% level. When controlling for the perceived consumption value in Table 5 (Column 3), we also find that the coefficient on whether one of the parents holds a university degree is significantly reduced. While the coefficient on parental education is still highly significant in Column 3, the point estimate is reduced by approximately half and the difference in coefficients between Columns 1 and 3 is statistically significant at the 1% level. The point estimate on the top income quartile is reduced to zero and is no longer significant. Again the difference in coefficients between Columns 1 and 3 is statistically significant at the 1% level.

Table 5: Predictors of Perceived Probability of Going to University (0-1)

Dependent variable: Conditional Probability of Going to University				
	(1)	(2)	(3)	(4)
Female child	0.071*** (0.02)	0.055*** (0.02)	0.020 (0.01)	0.013 (0.01)
Age of child	0.023 (0.02)	0.016 (0.02)	0.008 (0.01)	0.003 (0.01)
Patience	0.020*** (0.00)	0.017*** (0.00)	0.003 (0.00)	0.002 (0.00)
Risk	0.014*** (0.00)	0.018*** (0.00)	0.001 (0.00)	0.001 (0.00)
University (parent)	0.108*** (0.02)	0.102*** (0.02)	0.059*** (0.01)	0.056*** (0.01)
Single parent	0.014 (0.02)	-0.004 (0.02)	-0.024 (0.02)	-0.027 (0.02)
Children in HH	-0.008 (0.01)	-0.008 (0.01)	-0.006 (0.00)	-0.004 (0.01)
2nd income quartile	0.035 (0.02)	-0.002 (0.03)	0.001 (0.02)	-0.013 (0.02)
3rd income quartile	0.039 (0.02)	0.017 (0.03)	0.010 (0.02)	-0.002 (0.02)
4th income quartile	0.101*** (0.03)	0.057** (0.03)	0.017 (0.02)	-0.005 (0.02)
Perceived return (university)		0.044*** (0.01)		0.021*** (0.01)
Consumption value (university)			0.817*** (0.03)	0.825*** (0.03)
Region FE	Yes	Yes	Yes	Yes
R-Squared	0.16	0.18	0.53	0.54
Sample Mean	0.73	0.73	0.73	0.73
N	869	753	864	750

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variable is the perceived probability of going to university conditional on getting the grades in sixth form to go to university. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived return to and perceived consumption value of university.

Consistent with these findings, we find that socio-economic background characteristics significantly predict both the perceived consumption value of sixth form as well as the perceived consumption value of university (see Columns 3 and 4 of Table 6). The estimated socio-economic differences in perceived

consumption values are large. Students who have at least one parent with a university degree report the likelihood of enjoying sixth form to be 2.9 percentage points higher and the likelihood of enjoying university to be 6.1 percentage points higher. Compared to students in the bottom income quartile, students in the top income quartile report the likelihood of enjoying sixth form to be 5.3 percentage points higher, while they report the likelihood of enjoying university to be 10.2 percentage points higher. We also find a gender gap in the perceived consumption value of further education. For example, females report a 6.2 percentage point higher likelihood of enjoying university. Given that the expected consumption value mutes the gender difference in the intention to attend university in Column 4 in Table 5, one can postulate that the observed gender gap in enrolment could be driven by differences in the perceived consumption value.

Controlling for differences in the perceived returns to education also reduces some of the estimated coefficients on the socio-economic background variables in Tables 4 and 5. This is also consistent with the results in Table 6 (Columns 1 and 2). Parental education and parental income is not significantly associated with the perceived returns to sixth form. We do, however, find evidence that parental education and parental income is significantly associated with the perceived returns to university. Students who have at least one parent with a university degree perceive the returns to university to be 17.5 percentage points higher. Compared to individuals in the bottom income quartile, individuals in the top income quartile perceive the returns to university to be 18.6 percentage points higher.

We visualize these differences in Figure 4 which depicts the kernel densities of perceived returns (Panels A and C) and perceived consumption values (Panels B and D), separately for bottom and top income quartile respondents. In both panels which depict the distribution of the perceived consumption values we can see a clear shift to the right, and the Kolmogorov-Smirnov test of equality of distributions rejects the null at the 1% level.

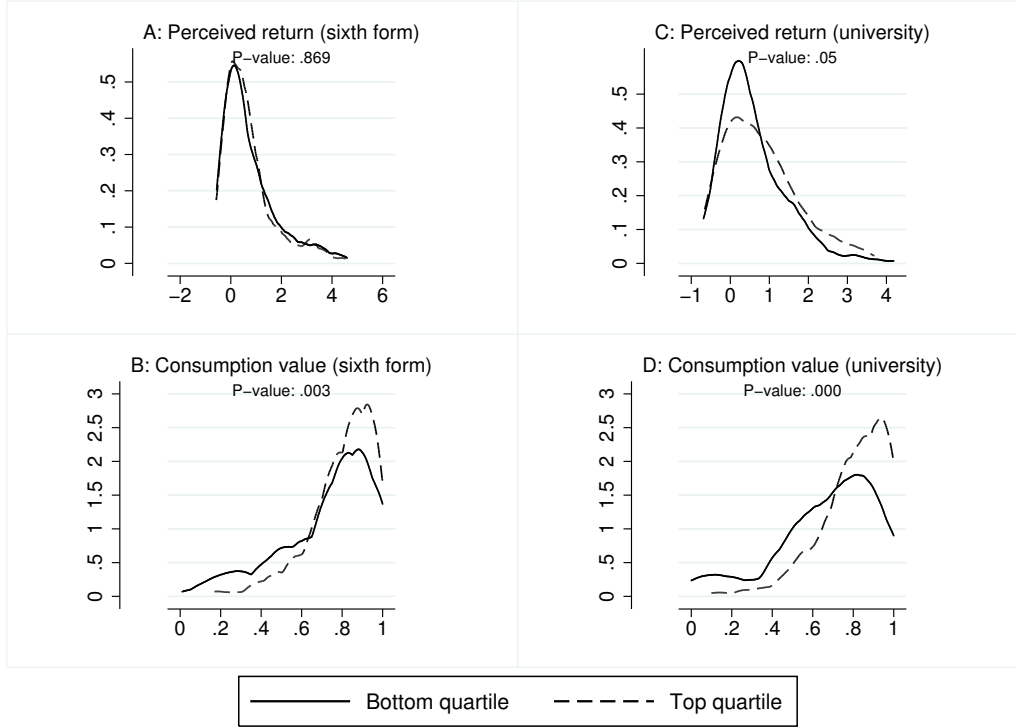
Table 6: Predictors of Perceived Returns and Consumption Values

	Perceived Return		Consumption Value	
	Sixth form	University	Sixth form	University
	(1)	(2)	(3)	(4)
Female child	0.058 (0.16)	0.226*** (0.07)	0.051*** (0.01)	0.062*** (0.01)
Age of child	0.277* (0.15)	0.122* (0.06)	0.016 (0.01)	0.018 (0.01)
Patience	-0.068* (0.04)	-0.032** (0.02)	0.020*** (0.00)	0.019*** (0.00)
Risk	0.056 (0.04)	0.006 (0.02)	0.006* (0.00)	0.016*** (0.00)
University (parent)	0.128 (0.18)	0.175** (0.07)	0.029** (0.01)	0.061*** (0.02)
Single parent	0.266 (0.20)	0.148* (0.09)	0.012 (0.02)	0.044** (0.02)
Children in HH	0.033 (0.06)	0.034 (0.03)	-0.011** (0.00)	-0.004 (0.01)
2nd income quartile	0.159 (0.22)	-0.023 (0.09)	0.037** (0.02)	0.047** (0.02)
3rd income quartile	0.019 (0.23)	0.101 (0.10)	0.023 (0.02)	0.036* (0.02)
4th income quartile	0.018 (0.25)	0.186* (0.11)	0.053*** (0.02)	0.102*** (0.02)
Region FE	Yes	Yes	Yes	Yes
R-Squared	0.03	0.06	0.12	0.18
Sample Mean	1.29	0.65	0.77	0.73
N	741	758	872	867

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variables are the perceived returns to sixth form (Column 1), the perceived returns to university (Column 2), the perceived consumption value of sixth form (Column 3) and the perceived consumption value of university (Column 4). Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income.



Figure 4: Heterogeneity in Perceived Returns and Consumption Values



Note: The different panels depict the kernel densities of individual beliefs about the returns to sixth form (Panel A), the consumption value of sixth form (Panel B), the returns to university (Panel C), and the consumption value of university (Panel D). The densities are depicted for bottom and top income quartile respondents, respectively. Reported p-values are from Kolmogorov-Smirnov tests of equality of distributions

## 5 Discussion

Given the strong associations that we document, the results of our analysis suggest that individual perceptions of the consumption value of further education are likely to play an important role in students' educational investment decisions. A natural question to ask is which aspects of the further education experience are particularly relevant to students when they make their educational choices. In our survey, we also ask students to state the top three reasons for why they would go to university. While 45% of all students state they would go to university 'to experience new things and places' and 23% say they would go to university because they would 'enjoy the social life', only 14% state that they 'enjoy education' as one of their primary three reasons. While this evidence is solely indicative, it does suggest that factors which go beyond the pleasure of knowledge acquisition are likely to be important in students' educational investment decisions. This evidence is also consistent with results in the recent

empirical literature which show that universities have increased their expenditures on consumption amenities, such as student activities, sports and dormitories, due to demand-side pressures (Jacob, McCall and Stange 2013).

The second main result which emerges from our analysis is that there are large socio-economic differences in perceived consumption values across socio-economic groups. The socio-economic differences are much stronger for perceived consumption values than for expected monetary returns. An important question which arises is why students from different socio-economic groups have different perceptions of whether they would enjoy further education. Beliefs and expectations are influenced by information. Low SES students might have less access to information related to further education and might therefore be less aware of the non-pecuniary benefits. A possible explanation for differential access to information is the influence of parents, siblings, relatives, and other members of the social network, who in the case of high SES households are more likely to have been to, or know people who have been to university.

Another potential explanation is that students do not only *perceive* the non-pecuniary benefits as different, but that the non-pecuniary benefits are actually different for students from different socio-economic groups. For example, students from low socio-economic groups might believe that they are more likely to struggle with the material covered at university, which is why they might be less likely to believe that they would enjoy the university experience. While we cannot provide a definite answer to this question, we document that the perceived likelihood of enjoying further education is indeed highly correlated with the perceived probability of getting the grades to continue to the next educational level, which can be regarded as a proxy for the students' perceived ability or aptitude. More specifically, the Spearman rank correlation between the perceived probability of getting the grades to go to sixth form and the perceived probability of enjoying sixth form is 0.51 (p-value=0.000), while the Spearman rank correlation between the perceived probability of getting the grades to go to university and the perceived probability of enjoying university is 0.64 (p-value=0.000).<sup>20</sup>

We re-estimate the main analyses of Tables 4 and 5 and additionally control for the perceived probability of getting the grades to continue to the next educational level. The results of this analysis are presented in Tables 7 and 8. We find that when we control for the perceived probability of getting the grades, the perceived consumption value is still highly significant. The magnitudes of the

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<sup>20</sup>When we re-estimate the regressions in Table 6 we also find that the perceived probability of getting the grades predicts the perceived consumption value over and above what can be predicted by the other characteristics (see Table A.4).

coefficients are still large, albeit muted, as one would expect. We also note that controlling for the perceived probability of getting the grades explains some of the socio-economic differences in responses, consistent with the fact that there is a socio-economic gradient in the perceived probability of getting the grades (see Table 3). Overall, these results suggest that differences in perceived ability levels can account for some of the differences in the perceived consumption value, but that it is likely that there are also other important differences in beliefs about non-pecuniary benefits or costs across individuals.

Table 7: Predictors of Perceived Probability of Going to Sixth Form (0-1)

Dependent variable: Conditional Probability of Going to Sixth Form						
	(1)	(2)	(3)	(4)	(5)	(6)
Female child	0.023** (0.01)	0.022* (0.01)	0.016 (0.01)	0.010 (0.01)	0.009 (0.01)	0.008 (0.01)
Age of child	0.006 (0.01)	0.008 (0.01)	0.008 (0.01)	0.002 (0.01)	0.002 (0.01)	0.008 (0.01)
Patience	0.004 (0.00)	0.006** (0.00)	0.005* (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.001 (0.00)
Risk	-0.005* (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.006** (0.00)	-0.006** (0.00)	-0.002 (0.00)
University (parent)	0.015 (0.01)	0.012 (0.01)	0.010 (0.01)	0.010 (0.01)	0.009 (0.01)	0.010 (0.01)
Single parent	-0.004 (0.01)	-0.016 (0.01)	-0.016 (0.01)	0.002 (0.01)	-0.000 (0.01)	-0.010 (0.01)
Children in HH	-0.002 (0.00)	-0.003 (0.00)	-0.002 (0.00)	0.003 (0.00)	0.003 (0.00)	0.002 (0.00)
2nd income quartile	0.007 (0.02)	0.003 (0.02)	0.003 (0.02)	0.002 (0.01)	0.004 (0.01)	0.002 (0.01)
3rd income quartile	-0.000 (0.02)	0.011 (0.02)	0.020 (0.02)	0.009 (0.01)	0.008 (0.01)	0.028* (0.01)
4th income quartile	0.024 (0.02)	0.017 (0.02)	0.017 (0.02)	0.023 (0.02)	0.021 (0.02)	0.020 (0.02)
Get grades for sixth form	0.683*** (0.03)	0.644*** (0.03)	0.637*** (0.03)	0.427*** (0.03)	0.412*** (0.03)	0.435*** (0.03)
Perceived return (sixth form)		0.010*** (0.00)	0.007** (0.00)			0.007*** (0.00)
Perceived return (university)			0.022*** (0.01)			0.018*** (0.01)
Consumption value (sixth form)				0.467*** (0.03)	0.450*** (0.03)	0.376*** (0.04)
Consumption value (university)					0.041 (0.03)	0.016 (0.03)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
R-Squared	0.43	0.45	0.48	0.56	0.55	0.56
Sample Mean	0.85	0.85	0.85	0.85	0.85	0.85
N	874	740	692	872	867	689

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variable is the perceived probability of going to sixth form conditional on getting the grades in year 11 to go to sixth form. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived probability of obtaining the grades in year 11 to go to sixth form, and the perceived returns to and perceived consumption values of sixth form and university.

Table 8: Predictors of Perceived Probability of Going to University (0-1)

Dependent variable: Conditional Probability of Going to University				
	(1)	(2)	(3)	(4)
Female child	0.035** (0.01)	0.029* (0.01)	0.015 (0.01)	0.011 (0.01)
Age of child	0.015 (0.01)	0.007 (0.01)	0.008 (0.01)	0.002 (0.01)
Patience	0.007** (0.00)	0.007* (0.00)	0.001 (0.00)	0.001 (0.00)
Risk	0.003 (0.00)	0.007* (0.00)	-0.001 (0.00)	0.000 (0.00)
University (parent)	0.069*** (0.02)	0.063*** (0.02)	0.053*** (0.01)	0.049*** (0.01)
Single parent	0.006 (0.02)	-0.010 (0.02)	-0.019 (0.02)	-0.024 (0.02)
Children in HH	-0.001 (0.01)	-0.000 (0.01)	-0.003 (0.00)	-0.001 (0.00)
2nd income quartile	0.006 (0.02)	-0.014 (0.02)	-0.004 (0.02)	-0.016 (0.02)
3rd income quartile	0.007 (0.02)	0.001 (0.02)	0.001 (0.02)	-0.006 (0.02)
4th income quartile	0.053** (0.02)	0.029 (0.02)	0.014 (0.02)	-0.003 (0.02)
Get grades for university	0.783*** (0.04)	0.771*** (0.04)	0.360*** (0.04)	0.365*** (0.04)
Perceived return (university)		0.031*** (0.01)		0.020*** (0.01)
Consumption value (university)			0.621*** (0.04)	0.619*** (0.04)
Region FE	Yes	Yes	Yes	Yes
R-Squared	0.44	0.45	0.57	0.58
Sample Mean	0.73	0.73	0.73	0.73
N	868	753	863	750

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variable is the perceived probability of going to university conditional on getting the grades in sixth form to go to university. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived probability of getting the grades in sixth form to go to university, and the perceived return to and perceived consumption value of university.

## 6 Conclusion

In this study we use a unique survey of secondary school students in the UK to investigate students' motives for educational attainment. We find that both the perceived pecuniary returns to education as well as the perceived consumption value of education significantly predict whether students state that they are likely to continue in full-time education conditional on getting the requisite grades. While differences in the perceived pecuniary returns can explain some of the variation in individual responses, we find that controlling for differences in the perceived consumption value of education explains a remarkably large share of the variation. In fact, individual differences in the perceived consumption value alone can explain 43% and 51% of the variation in individual responses for the intent to continue to sixth form and university, respectively. We further document large socio-economic differences in perceived consumption values. Individuals from high socio-economic groups are a lot more likely to perceive further education as more enjoyable. Furthermore, we find that controlling for individual differences in perceived consumption values significantly reduces the socio-economic gap in whether students state that they are likely to continue in full-time education. For example, once we control for the perceived consumption value of university, we no longer find evidence for an income gradient in whether students report being likely to go to university if they get the necessary grades. We also document gender differences in the perceived consumption value of university and find that once we control for the perceived consumption value of university there is no longer evidence of a gender gap in whether students plan to go to university.

From a policy perspective, the paper contributes to the on-going debate about which policies are likely to be effective in increasing educational attainment among students from disadvantaged backgrounds. While traditional policies have focused on alleviating credit constraints, the results of this paper suggest that policies which target students' perceptions of the pecuniary and non-pecuniary benefits of further education might have the potential to raise educational attainment levels, especially for students from disadvantaged backgrounds. Further research is needed on which aspects of the further education experience are particularly relevant to students when they make their educational choices, and how actual experiences of further education differ for individuals from different socio-economic groups.

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## A Supplementary Analysis

Table A.1: Predictors of Perceived Conditional Probabilities (0-1) using Tobit

	Sixth Form		University	
	Grades for sixth form	Go to sixth form	Grades for university	Go to university
	(1)	(2)	(3)	(4)
Female child	0.058*** (0.01)	0.097*** (0.02)	0.045*** (0.01)	0.086*** (0.02)
Age of child	0.012 (0.01)	0.028 (0.02)	0.014 (0.01)	0.031 (0.02)
Patience	0.019*** (0.00)	0.023*** (0.00)	0.017*** (0.00)	0.023*** (0.00)
Risk	0.010*** (0.00)	-0.004 (0.01)	0.016*** (0.00)	0.017*** (0.01)
University (parent)	0.046*** (0.02)	0.080*** (0.02)	0.053*** (0.02)	0.126*** (0.02)
Single parent	0.053*** (0.02)	0.053** (0.03)	0.010 (0.02)	0.025 (0.03)
Children in HH	-0.005 (0.00)	-0.005 (0.01)	-0.009* (0.00)	-0.007 (0.01)
2nd income quartile	0.042** (0.02)	0.031 (0.03)	0.037* (0.02)	0.033 (0.03)
3rd income quartile	0.068*** (0.02)	0.050* (0.03)	0.042** (0.02)	0.046 (0.03)
4th income quartile	0.094*** (0.02)	0.108*** (0.03)	0.066*** (0.02)	0.123*** (0.03)
Region FE	Yes	Yes	Yes	Yes
$\chi^2$	138.03	102.67	137.41	141.72
Sample Mean	0.78	0.85	0.75	0.73
N	874	874	871	869

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from Tobit regressions in which the dependent variables are the four elicited conditional probabilities (0-1), respectively. More specifically, the dependent variables are (i) the perceived probability of obtaining the grades in year 11 to go to sixth form (Column 1), (ii) the perceived probability of going to sixth form conditional on getting the grades (Column 2), (iii) the perceived probability of obtaining the grades in sixth form to go to university (Column 3), and (iv) the perceived probability of going to university conditional on getting the grades (Column 4). Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income.

Table A.2: Predictors of Perceived Probability of Going to Sixth Form (0-1) using Tobit

Dependent variable: Conditional Probability of Going to Sixth Form						
	(1)	(2)	(3)	(4)	(5)	(6)
Female child	0.097*** (0.02)	0.087*** (0.02)	0.073*** (0.02)	0.041*** (0.02)	0.036** (0.02)	0.030* (0.02)
Age of child	0.028 (0.02)	0.026 (0.02)	0.029 (0.02)	0.010 (0.01)	0.012 (0.01)	0.024* (0.01)
Patience	0.023*** (0.00)	0.022*** (0.00)	0.021*** (0.00)	0.003 (0.00)	0.001 (0.00)	0.002 (0.00)
Risk	-0.004 (0.01)	0.000 (0.01)	0.000 (0.01)	-0.009** (0.00)	-0.011*** (0.00)	-0.008* (0.00)
University (parent)	0.080*** (0.02)	0.061*** (0.02)	0.048** (0.02)	0.046*** (0.02)	0.039** (0.02)	0.033* (0.02)
Single parent	0.053** (0.03)	0.036 (0.03)	0.029 (0.03)	0.039** (0.02)	0.031 (0.02)	0.021 (0.02)
Children in HH	-0.005 (0.01)	-0.006 (0.01)	-0.007 (0.01)	0.008 (0.01)	0.008 (0.01)	0.005 (0.01)
2nd income quartile	0.031 (0.03)	0.006 (0.03)	0.013 (0.03)	0.000 (0.02)	-0.001 (0.02)	-0.002 (0.02)
3rd income quartile	0.050* (0.03)	0.058** (0.03)	0.067** (0.03)	0.035 (0.02)	0.028 (0.02)	0.060*** (0.02)
4th income quartile	0.108*** (0.03)	0.088*** (0.03)	0.088*** (0.03)	0.059** (0.02)	0.047* (0.02)	0.051** (0.03)
Perceived return (sixth form)		0.018*** (0.00)	0.015** (0.01)			0.013*** (0.00)
Perceived return (university)			0.056*** (0.01)			0.032*** (0.01)
Consumption value (sixth form)				0.857*** (0.04)	0.754*** (0.05)	0.676*** (0.05)
Consumption value (university)					0.160*** (0.04)	0.142*** (0.05)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Chi-squared	102.67	106.48	122.08	478.98	483.39	376.25
Sample Mean	0.85	0.85	0.85	0.85	0.85	0.85
N	874	740	692	872	867	689

Notes: Standard errors in parentheses. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. The columns report the marginal effects from Tobit regressions in which the dependent variable is the perceived probability of going to sixth form conditional on getting the grades in year 11 to go to sixth form. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived returns to and the perceived consumption values of sixth form and university.

Table A.3: Predictors of Perceived Probability of Going to University (0-1) using Tobit

Dependent variable: Conditional Probability of Going to University				
	(1)	(2)	(3)	(4)
Female child	0.086*** (0.02)	0.064*** (0.02)	0.024 (0.02)	0.013 (0.02)
Age of child	0.031 (0.02)	0.028 (0.02)	0.012 (0.01)	0.010 (0.01)
Patience	0.023*** (0.00)	0.019*** (0.01)	0.003 (0.00)	0.002 (0.00)
Risk	0.017*** (0.01)	0.021*** (0.01)	0.001 (0.00)	0.002 (0.00)
University (parent)	0.126*** (0.02)	0.116*** (0.02)	0.069*** (0.02)	0.062*** (0.02)
Single parent	0.025 (0.03)	-0.000 (0.03)	-0.022 (0.02)	-0.028 (0.02)
Children in HH	-0.007 (0.01)	-0.008 (0.01)	-0.004 (0.01)	-0.003 (0.01)
2nd income quartile	0.033 (0.03)	-0.010 (0.03)	-0.006 (0.02)	-0.023 (0.02)
3rd income quartile	0.046 (0.03)	0.021 (0.03)	0.012 (0.02)	0.001 (0.02)
4th income quartile	0.123*** (0.03)	0.069** (0.03)	0.021 (0.02)	-0.005 (0.03)
Perceived return (university)		0.060*** (0.01)		0.032*** (0.01)
Consumption value (university)			0.927*** (0.04)	0.924*** (0.04)
Region FE	Yes	Yes	Yes	Yes
Chi-squared	141.72	144.77	596.18	540.21
Sample Mean	0.73	0.73	0.73	0.73
N	869	753	864	750

Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from Tobit regressions in which the dependent variable is the perceived probability of going to university conditional on getting the grades in sixth form to go to university. Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, and household income. Additional controls include the perceived return to and perceived consumption value of university.

Table A.4: Predictors of Perceived Returns and Consumption Values

	Perceived Return		Consumption Value	
	Sixth form	University	Sixth form	University
	(1)	(2)	(3)	(4)
Female child	0.026 (0.16)	0.206*** (0.07)	0.025** (0.01)	0.032*** (0.01)
Age of child	0.273* (0.15)	0.116* (0.06)	0.011 (0.01)	0.011 (0.01)
Patience	-0.079** (0.04)	-0.039** (0.02)	0.011*** (0.00)	0.010*** (0.00)
Risk	0.051 (0.04)	0.001 (0.02)	0.002 (0.00)	0.007** (0.00)
University (parent)	0.111 (0.18)	0.151** (0.08)	0.009 (0.01)	0.028** (0.01)
Single parent	0.234 (0.21)	0.140* (0.09)	-0.012 (0.01)	0.039*** (0.01)
Children in HH	0.036 (0.06)	0.040 (0.03)	-0.009** (0.00)	0.003 (0.00)
2nd income quartile	0.145 (0.22)	-0.022 (0.09)	0.015 (0.02)	0.021 (0.02)
3rd income quartile	-0.021 (0.23)	0.089 (0.10)	-0.009 (0.02)	0.007 (0.02)
4th income quartile	-0.036 (0.25)	0.170 (0.11)	0.008 (0.02)	0.061*** (0.02)
Get grades for sixth form	0.651 (0.45)		0.520*** (0.03)	
Get grades for university		0.430** (0.19)		0.677*** (0.03)
Region FE	Yes	Yes	Yes	Yes
R-Squared	0.04	0.07	0.32	0.48
Sample Mean	1.29	0.65	0.77	0.73
N	740	756	872	866

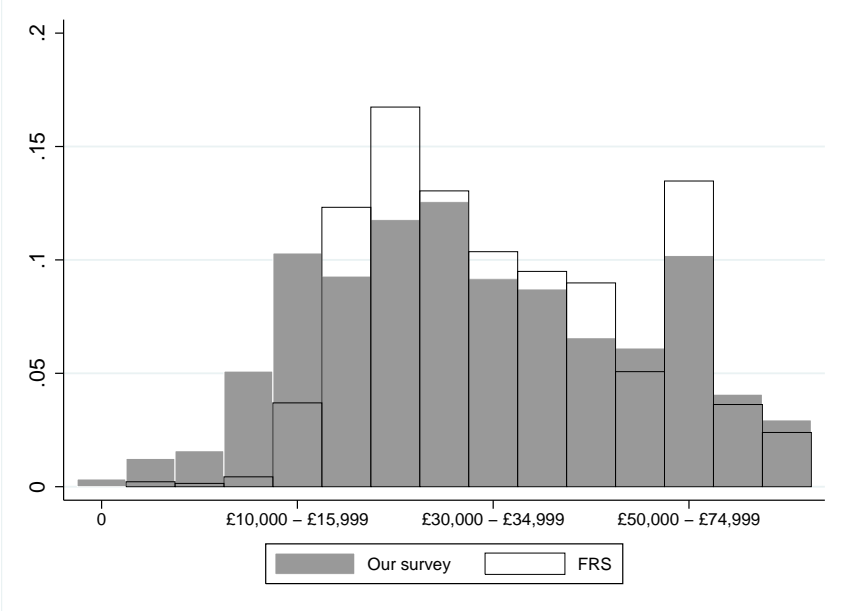
Notes: Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The columns report the marginal effects from least squares regressions in which the dependent variables are the perceived returns to sixth form (Column 1), the perceived returns to university (Column 2), the perceived consumption value of sixth form (Column 3) and the perceived consumption value of university (Column 4). Controls include the gender and age of the child, as well as the child's patience and risk attitudes. Moreover, the regressions control for whether at least one of the child's parents has a university degree, whether the child is taken care of by a single parent, the number of children in the household, household income, and the perceived likelihood of getting the grades to proceed to the next educational stage.

## B Questionnaire

1. *On a scale of 0-10, where 0 is extremely impatient and 10 is extremely patient, how patient would you say you are?*
2. *On a scale of 0-10, where 0 is never and 10 is always, how willing to take risks would you say you are?*
3. *How likely (0-100%) do you think it is you will get the grades to stay in full-time education at the end of year 11?*
4. *If you get the grades at the end of year 11, how likely (0-100%) do you think it is you will stay on in full-time education at the end of year 11?*
5. *If you do stay on after year 11, how likely (0-100%) do you think it is you'll do well enough in your future qualifications in sixth form/college to go to university?*
6. *Assuming you do get the grades in sixth form/college to go to university, how likely do you think it is that you will go to university?*
7. *Now look ahead to what you might be doing at the age of 25, and imagine how this might depend on the education choices you make. How likely do you think it is that you will be in a paid job when you are 25 if you...*
  - *... leave full-time education at the end of year 11?*
  - *... stay in full-time education in sixth form/college but not go to university?*
  - *... stay in full-time education in sixth form/college and then go to university?*
8. *If you have a job at the age of 25, what is your best estimate of how much you might be earning if you...*
  - *... leave full-time education at the end of year 11?*
  - *... stay in full-time education in sixth form/college but not go to university?*
  - *... stay in full-time education in sixth form/college and then go to university?*
9. *If you do stay on after year 11, how likely (0-100%) do you think it is you would enjoy full-time education in sixth form/college?*
10. *If you do go to university, how likely (0-100%) do you think it is that you would enjoy it?*

# C Sample

Figure C.1: Comparison of Household Income Distributions



Note: This figure shows the distribution of annual household income (after tax) for households in our sample and for a representative sample of households with at least one child aged 12-15 (Source: Family Resources Survey 2013-2014).