



Working Paper Series
Department of Economics
University of Verona

A Field Study on University Enrolment: The Intentions of Prospective Students

Martina Menon, Federico Perali

WP Number: 7

February 2015

ISSN: 2036-2919 (paper), 2036-4679 (online)

A Field Study on University Enrolment: The Intentions of Prospective Students*

Martina Menon[†] and Federico Perali[‡]

This draft: March 2015

Abstract

We study the university choice of prospective students using a unique dataset enriched with “lab-in-the-field” experiments aimed at eliciting risk and time preferences of students. Controlling for assortative mating, we find that father’s rather than mother’s education is significantly associated with the likelihood of children’s enrolment in university indicating that the intergenerational transmission of human capital is mainly channelled through the father’s education. Family possessions, as measured by homeownership, are positively associated with the likelihood of children’s enrolment, while parental income has a small impact on this choice. This result suggests that in our sample there is equal access to university irrespective of short-time family liquidity constraints. We also find that economic preference parameters, such as risk and time preferences, account for a small part of the prospect of enrolling in university, while subjective expectations, effort and school ability of children are strong predictors of future schooling investment. In addition, through a counterfactual analysis, sports activities among children appear to increase the university enrolment rate. Our findings provide helpful directions for decision-makers to attract talented students to tertiary education.

JEL Classification: I21, I28.

Keywords: University enrolment, intentions data, family background, subjective expectations, cognitive and non-cognitive abilities, effort, counterfactual analysis.

*We gratefully acknowledge financial support from the STAREBEI grant. Special thanks go to Maria Luisa Ferreira, Hubert Strauss, Daniele Checchi, Vito Peragine, Veronica Polin, Eugenio Peluso, Marcella Veronesi, Gabriella Berloff, Giuseppe Porro, Tommaso Agasisti for their insightful comments and suggestions. Special thanks go to Federica Barzi, Elena Dalla Chiara and Nicola Tommasi for data elaborations and to Mario Pomini, Nadia Dallago, Renato Cavedon, Dolores Rizzotto, Silvia Saoncella, Andrea Ongaro and Enrico Prospero who helped collecting data. We thank all participating students and those who made their participation possible at the level of the Veneto administration (Ufficio Scolastico Provinciale di Verona and Ufficio Scolastico Regionale di Venezia). We are grateful to the Headmasters of the involved schools and Rectors of the participating universities. All errors and omissions are the sole responsibility of the authors.

[†]University of Verona (Italy), Department of Economics, martina.menon@univr.it.

[‡]University of Verona (Italy), Department of Economics and CHILD, federico.perali@univr.it.

1 Introduction

Our objective is to understand why prospective students decide to go or not to go to university. This choice is highly complex. It is modelled by the theory of human capital (Becker 1964) as an investment that produces uncertain monetary benefits in the future but also entails monetary and non-monetary costs. In this view, students, as individual decision-makers, decide to invest in higher education if perceived future benefits, discounted at the time the decision is made, exceed actualized expected costs.

Benefits can be identified primarily with the returns to the investment in education. Subjective expectations about educational benefits depend on students' evaluation of employment prospects, their quality, and relation to personal aspirations and anticipated earnings. Benefits can be broken down into a *wage premium*, given by the wage increase associated with an additional year of schooling, an *employment premium*, generated by a marginal increase in the likelihood of employment, and in a *pension premium* corresponding to the present value of higher retirement benefits derived from wage and employment premia (De la Fuente and Jimeno 2005, Boarini and Strauss 2007).

Students do not have an exact idea of the monetary costs of post-compulsory education, such as tuition fees, purchase of books or computers and living costs related to lodging and transportation. On the other hand, they may better estimate opportunity costs of education due to foregone earnings. There are also non-monetary costs of studying, under the form of *learning pain*, that greatly differ from student to student. Although unobservable by researchers, disutility from studying can be proxied by school ability and attitudes of children.

The present value of the estimated payoffs clearly depends on the personal discounting of time and the propensity to delay consumption. Rate of time preferences are not constant over time and gains are generally discounted more than losses (Frederick, Loewenstein and O'Donoghue 2002). Myopic students, for example, prefer present to future consumption. They heavily discount future gains from education, which proves less attractive with respect to sure sources of income obtainable from entering the job market. In general, impatient students need higher returns to pursue tertiary education.

Risk preferences are another important factor affecting the decision to invest in human capital (Weiss 1971, 1972, Levhari and Weiss 1974). A risk-averse student who is not a top performer may think of higher education as risky and potentially a waste of time and prefer to look for a low-risk, low-skilled job after school. In general, if education is perceived as a risky prospect, then the optimal number of years of schooling decreases when risk aversion increases. On the other hand, if investment in education is perceived as a form of insurance, then years invested in education increase with the degree of risk aversion.

The benefits and costs to students of choosing to enter higher education are not ob-

servable by researchers, whereas the factors that shape their preferences are observable. As the literature posits, educational preferences of students are in general affected by family circumstances and the social environment in which they live. These characteristics are of special interest in guiding public actions that intend to increase the degree of equality of opportunity by boosting the participation rate of tertiary education. The individual characteristics of students, their cognitive abilities and effort also play a sizeable role in educational attainment. In addition, non-cognitive abilities also contribute to students' university choice (Heckman 2008, Heckman and Kautz 2012, 2013, Heckman, Pinto and Savelyev 2013, Heckman and Rubinstein 2001).

We designed a comprehensive survey administered to high school leavers with the main features of this discussion in mind. The survey was managed by the authors within the framework of a project commissioned by the European Investment Bank through the STAREBEI programme for analyzing the student loan market in Italy. We collected a sample of 2,703 students representative of the high schools in Veneto, a region in north-east Italy.

Our prospective data benefits from a large set of variables, enabling us to set up an empirical model accounting for the major factors that determine university choice. This abundance of information helps achieve conditional independence of the error term in the value function of estimated models, reducing potential biases in coefficient estimations. In addition to personal and family background variables, we elicited the intention of students to predict their future after school (Manski 1990), their effort and school ability, their job aspirations, and their subjective expectations about labour market opportunities (Attanasio and Kaufmann 2014, Delavande and Zafar 2014). We asked students to reveal their reservation wage (Betts 1996, Manski 1993) and we measured the role played by social interactions (Lalive and Cattaneo 2009) with peers, parents and teachers in explaining the university decision process.

We also collected information about the non-cognitive abilities of students. Because of the risk associated with the investment in human capital (Weiss 1972, Levhari and Weiss 1974), we conducted a "lab-in-the-field" experiment administered to each student aimed at eliciting their risk and time preferences (Andersen *et al.* 2008, Coller and Williams 1999, Harrison, Lau and Williams 2002, Holt and Laury 2002). We think of risk and time preferences as innate individual personality traits. Few empirical analyses investigate the association between students' economic preferences and schooling attainment and evidence, especially for risk preferences, is yet inconclusive (Belzil and Leonardi 2007, 2013). Our analysis benefits from using measures of economic preferences elicited at the moment in which the university choice is made, avoiding problems of endogeneity. Unlike most existing research (Belzil and Leonardi 2007, 2013, Brodaty, Gary-Bobo and Prieto 2014, Castillo *et al.* 2011, Golsteyn, Gronqvist and Lindahl 2014), our dataset comprises

both risk and time preferences of students allowing us to conduct a more exhaustive empirical analysis. Interestingly, Checchi, Fiorio and Leonardi (2014) use parents' risk aversion as a proxy for children's risk preferences.

We find robust and suggestive evidence consistent with the existing literature that provides helpful directions for decision-makers who intend to foster the university entry choice of Italian students, paying special attention to less affluent but talented students. Family income is a weak predictor of student's enrolment choice (Cameron and Heckman 1998, Cameron and Taber 2004, Carneiro and Heckman 2002, Løken 2010), while family possessions, which can be considered as proxies for long-term liquidity constraints, are statistically associated with this choice (Chowa *et al.* 2013). Another remarkable finding in relation to family characteristics is that, controlling for assortative mating, the father's rather than mother's education is significantly associated with the likelihood of enrolling in university (Behrman and Rosenzweig 2002, Plug 2004). Subjective expectations of children, their school ability and effort are significant determinants of the investment in higher education. The study shows that economic preferences of students play only a small part in the decision about further education (Belzil and Leonardi 2007).

Our findings are confirmed by a sensitivity analysis carried out using different variable specifications and modelling alternative educational choices. In terms of gender, the study shows that girls' decisions about university are mainly influenced by personal characteristics and boys's decisions by their family circumstances.

We are also interested in investigating how other non-cognitive abilities, other than risk and time preferences, such as "playing sport", may affect educational choices. To this end, we carry out a counterfactual exercise analyzing the probability of enrolling in university if non-sporty children's observable characteristics had been equal to sporty children's observable characteristics. We find that taking part in sports activities is positively correlated with the decision to go to university.

The plan of the paper is as follows. Section 2 presents the empirical strategy used to model university choice. Section 3 describes the survey design and main features of the data gathered by the authors. Section 4 shows the benchmark empirical results and validates the robustness of our findings testing different specifications of family income and modelling alternative educational choices. Section 5 shows how the model for university choice changes with hypothetical scenarios. Section 6 concludes and discusses policy implications.

2 Modelling University Choice

High school students in their last year face the choice of enrolling in university or joining the labour market. In the Italian school system students may go to university irrespective

of both high school history and final grade. We asked school leavers the following question: “Do you intend to enrol in university?” with three mutually exclusive alternatives “Yes, I will enrol in university”, “No, I will go to work”, and “I have not yet decided.” For simplicity’s sake, throughout the paper, we refer to the latter as “I do not know” (DK) or the “undecided” alternative.

We assume that high school student i has utility from choosing alternative j equal to

$$U_{ij} = X_i' \beta_j + \varepsilon_{ij}, \quad (1)$$

where $X_i' \beta_j$ is a deterministic term of observed characteristics X_i of student i , β_j is the vector of parameters specific to each alternative j ,¹ and ε_{ij} is a random taste shifter that is supposed to capture the effect of unobservable attributes associated with alternative j . The term ε_{ij} is viewed as random by the researcher, while it is assumed known to the child. It is common to assume that ε_{ij} is independent and identically distributed with the Type I extreme value distribution. Thus, the probability of revealing alternative j conditional on X_i and β_j has the multinomial logit (MNL) form

$$P(E_i = j | X_i, \beta_j) = P(U_{ij} > U_{ik}) = P_{ij} = \frac{\exp(X_i' \beta_j)}{\sum_{j=1}^3 \exp(X_i' \beta_j)}, \quad (2)$$

where E_i denote the university choice j chosen by child i with $j = 1$ (Yes), $j = 2$ (No), and $j = 3$ (I do not know). When student i chooses alternative j , it means that $U_{ij} \geq U_{ik}$ for all $k \neq j$. For ensuring model identification we choose $j = 3$, the undecided state in our case, as the base alternative.

The MNL estimation enables the calculation of the marginal effects describing the probability of changes in E_i associated with changes in an independent variable. Marginal effects are calculated for a student with mean characteristics \bar{X}

$$\frac{\partial P_{ij}}{\partial x_{ki}} = P_{ij} (\beta_j - \sum_{j=1}^3 P_{ij} \beta_j), \quad (3)$$

where $\sum_{j=1}^3 P_{ij} \beta_j$ is a probability weighted average of the estimated coefficients. Marginal effects depend on both the estimated coefficient β_j and on all other independent variables.

We assume that the high school student reveals the preferred intention, that is the choice that provides the highest utility, or does not make the intention manifest because still undecided. The intention to invest in tertiary education is chosen if the net benefit is evaluated to be greater than zero. At the time of the interview, undecided students are assumed to have incomplete information about the benefits and costs associated with the choice, but know their preferences with certainty. Thus the “I don’t know” answer is

¹ X_i is a $k \times 1$ vector of covariates with elements x_{ki} and β_j is a $k \times 1$ regression coefficient vector.

a valid response that is interesting to model. In Section 5, we think of the DK responses as incomplete data generated by measurement problems and conduct the analysis as if the DK responses were either “Yes” or “No” choices.

3 Survey Design, Sampling and Data

This section sets out the survey design, sampling method for data collection, and main features of the data collected.

3.1 Survey Design and Sampling Method

Our data come from a school-based survey conducted by the authors from March to April 2009 aimed at investigating the educational choice of high school leavers. The survey was conducted about six months before the university deadline for applications. The data are a representative sample of the population of high school leavers living in Veneto,² a region located in the north-east of Italy. Data were collected using a computer assisted self-interview survey method (CASI) held in the school’s computing rooms acting as our “lab-in-the-field” by providing access to a dedicated website (Levitt and List 2007, 2009, List 2009). Participation in the survey was voluntary. The questionnaire underwent a pre-test period of two weeks. High schools were preliminarily contacted by e-mail and by telephone in order to illustrate the research objectives and its relevance for students. Once the school decided to take part, the headmaster allowed a group of last year students to participate in the web-survey. Most high schools asked their teachers for help during the survey session. A total of 2,872 students took part to the survey and after quality control and consistency checks 2,703 observations were retained.

The questionnaire comprises three main parts: a) family background, b) individual characteristics, aspirations, subjective expectations, and school ability of students, and c) preferences towards risk, time and loan aversion. To elicit students’ attitude towards risk and time, the questionnaire addressed students with some decision problems in hypothetical situations, adopting an experimental setting (Coller and Williams 1999, Harrison, Lau and Williams 2002, Holt and Laury 2002). To enhance the quality of responses, the aims of the research were explained to students and a warm-up section in the questionnaire

²The decision to study the tertiary education intentions of students in Veneto was based partly on the particular educational environment and economy of the region. Veneto hosts one of the oldest universities in the world, the University of Padua, founded in 1222. In addition, there are two further universities of national importance: the Universities of Venice, founded in 1326, and Verona, founded in 1822. The OECD (Invalsi 2009) has found that students in the north-east of Italy, mainly comprising the Veneto region, are the highest achievers in the country. The Region was also chosen due to the personal contacts of the authors with High School administrators in Veneto. These contacts facilitated the participation of schools and management of the survey, contributing to the quality of the research.

was used to familiarize students with the web-survey technique. The questionnaire was programmed using SNAP to prompt screen messages when responses were inconsistent.

The population of interest were last year high school students. We used a dataset covering all 466 schools in the Veneto region issued by the local regional school department, classifying the educational institutions on a geographical basis and allowing stratification of the sample according to the 579 municipalities and seven provinces of the region. Sampling was checked daily to achieve a proportional stratified sample. When a stratum was not proportional to its corresponding size in the population, the high schools belonging to that stratum were contacted again through a follow-up recall session to obtain the most balanced sample possible considering the voluntary basis of the participation.

The final sample over-represents the high school student populations of Verona and Vicenza, probably because of the proximity of the authors to these provinces, with a ratio between observed size and expected size of 174.84 per cent and 130.81 per cent, respectively. Conversely, the high school student populations of Padua and Treviso are under-represented with a ratio between observed size and expected size of 62.05 per cent and 55.81 per cent, respectively. However, due to the homogeneity of municipalities in Veneto, the sample is expected to be representative of the region as a whole.

3.2 Data Description

3.2.1 The Tertiary Education Choice

We asked the students: “Do you intend to enrol in university?” with three mutually exclusive outcomes “Yes, I will enrol in university”, “No, I will go to work”, and “I have not yet decided.” At the time of the interview about 54 per cent of students declared the intention to enrol in university, while 20 per cent intended to enter the job market and the remaining 26 per cent were undecided. These participation rates are in line with official statistics (Regione Veneto 2011) which show that in the academic year 2008/2009 the enrolment rate was 58.4 per cent for the Veneto region compared to a national rate of 63 per cent. It is therefore reasonable to expect that some proportion of undecided students ended up going to university.

3.2.2 Family Background

Family Structure According to Table 1, the average family size has 4 members. Interestingly, the structure of the family is uniform across choice alternatives also for other characteristics, such as single parenthood and whether decisions are made jointly by parents and children. As an example, in all response groups, 9 per cent of students who said they would enrol in tertiary education are from a single parent family. Intra-household decisions are jointly made by parents and children in 39 per cent of cases.

Parental Human Capital and Working Status Father and mother educational backgrounds are distributed similarly across post-secondary choices. This pattern similarity between fathers' and mothers' education comes from the assortative mating effect by educational strata. In more than 20 per cent of cases a high level of education of either the father (24 per cent) or the mother (22 per cent) is associated with the intention to pursue tertiary education, while in less than 5 per cent of cases a university education of parents is associated with the intention of children to go to work. In the sample, fathers' unemployment is negligible. About 92 per cent of students intending to enrol in university live in a family where the father is fully employed and about 39 per cent have a self-employed father. These figures slightly decrease for the other two response alternatives. Having a working mother is relatively more associated with the propensity to enrol in university (74 per cent) rather than going to work (61 per cent) or being undecided (63 per cent).

Family Income and Assets Family income ranges from the lowest quintile of 1,181 euros per month to the highest of 4,828 euros per month. On average, children intending to enrol in university have a higher, but comparable, average family income than those intending to go to work or as yet undecided (2,846, 2,248, and 2,341 euros, respectively). Looking at raw data, there is a positive association between family income and university choice. As income increases, the propensity to enrol in university increases, and the propensity to work and to be undecided decrease. Unlike income distribution, family asset possessions, measured by homeownership, is more uniformly distributed across university choice alternatives. About 88 per cent of children intending to enrol in university live in houses owned by their family. This percentage slightly decreases to 84 per cent for those intending to go to work or undecided about their future.

Geographical Location The intention to go to university rather than work or indecision is higher for students who live in a residential area, 71 per cent as opposed to about 60 per cent. This location effect is also found when comparing urban/non-urban areas. Children who live in urban areas have a higher propensity to continue studying (35 per cent versus less than 24 per cent). This is partly due to cultural reasons and to convenience where the university is close by. There are also marked infra-regional differences in the intention to enrol in university. For example, Rovigo has the lowest university participation rate (3 per cent) among the Veneto provinces.

3.2.3 Individual Characteristics of Students

Gender and Social Interaction As shown in Table 2, gender difference in willingness to invest in tertiary education is in favour of females. This evidence is in line with a

common trend in Italy and in the rest of Europe. Among students intending to enrol in university 55 per cent are female, while only 48 per cent and 38 per cent of those undecided and intending to work, respectively, are female. Child-parent interaction is a key channel through which parents transmit their background to their children. In the sample, 70 per cent of students intending to go to university said they had been influenced in their decision by their parents. This figure decreases to 67 per cent for undecided students and to 51 per cent for students intending to work. Students who intend to go to work have a higher propensity for interaction with others (55 per cent) in making their choice than the other two choices (48 per cent of those saying yes and 36 per cent of undecided children).

Aspirations and Subjective Expectations In general, job aspirations play a relevant role in university participation choices (Page, Garboua and Montmarquette 2007). This evidence is present in our data too, where only 6 per cent of prospective students believe that can aspire only to a low qualified job. This figure increases to 16 per cent among undecided students and reaches 27 per cent among students intending to work after school.

Reservation wages reflect job aspirations, personal abilities and wage expectations (Betts 1996, Manski 1993). This information is elicited asking students the minimum monthly income net of taxes that they would like to earn to enter the labour market and quit their studies. This subjective measure depends on the personal level of self-esteem, prevailing job market conditions and perceptions about returns to education. High school leavers may overestimate the expected increase in lifetime earnings resulting from the investment or they may have mistaken expectations about events far in the future. The declared reservation wages convey reasonable information because a student intending to go to work declares a reservation wage which is 62 per cent of the wage of about 1,800 euros stated by prospective students. If compared with the monthly wage structure one year after graduation of 1,149 euros as estimated by AlmaLaurea (2011), we observe that the reservation wage for future workers is closer to the market wage than the reservation wage revealed by university candidates. The average level of reservation wage declared by students is 1,651 euros.

We also collect data about beliefs in the usefulness of a university degree by asking students whether a degree is useful a) to find a job, b) to find the desired job, c) to find a well-paid job. In 75 per cent of cases, children intending to invest in tertiary education say a degree is useful to enter the desired job, in 63 per cent that it helps find a job and 62 per cent that it helps get a well-paid job. Only 20 per cent of students intending to go to work say a degree is useful to find a job, 24 per cent that it helps find the desired job and 35 per cent that it helps find a well-paid job. Only 40 per cent of undecided students say that university helps find a job, 52 per cent that it helps find the desired job and 50

per cent that it helps find a well-paid job.

Subjective expectations about employment opportunities, quality of employment and wage premium are relevant factors in the university choice (Attanasio and Kaufmann 2014). To measure labour market expectations after graduation, we adopt the following statements: after graduation a) I will easily find a job, labeled as “confident”, b) I will have to overcome many difficulties to find a job, labeled as “try hard”, c) I will find a job but it will not match my aspirations, labeled as “scale down”, and d) no I will not find a job, labeled as “pessimistic”. Coherently, among children who intend to enrol in university and those undecided there is a lower proportion of “confident” (34 per cent and 24 per cent, respectively) compared to students looking for work (44 per cent). A high percentage of prospective students expect to find a job but with many difficulties (52 per cent). A similar expectation is declared by undecided students (48 per cent). In 2009 the youth unemployment rate was 14.4 per cent in Veneto (well below the EU27 youth unemployment rate of 19.8 per cent). The nature of the labour market in Veneto explains the low percentage of pessimists in our sample. They range from 7 per cent (working-oriented children) to 10 per cent (undecided children).

Non-Cognitive Abilities In order to learn to what extent risk and time preferences affect investments in higher education, we measured the individual level of aversion to risk and the time discount rate through lottery experiments as described in the online Appendix (Coller and Williams 1999, Harrison, Lau and Williams 2002, Holt and Laury 2002, Menon and Perali 2009). Risk and time preferences are both uniformly distributed across choice alternatives. The distribution of risk preferences is concentrated around “neutrality” toward risk. Similarly, the distribution of discount rates is concentrated around the “medium” level. The proportion of high school leavers discounting time heavily is higher than the proportion of students who are highly averse to risk.

Attitudes To shed further light on children heterogeneity, the intention to go to university is also intersected with the attitudes towards religiosity, smoking and sociability behaviour. Students not intending to go to university are less religious, more likely to be smokers (48 per cent), less likely to engage in sport (25 per cent) and are internet users (10 per cent).

Cognitive Abilities and Effort Looking at school outcome indicators (bottom part of Table 2), as expected, high-school performance is correlated with university intentions. Those who intend to pursue higher education show past year (7) and math grade (6.8) averages higher than others and only 10 per cent repeated at least one grade during

high school compared to 35 per cent of those intending to work.³ Prospective university students also study longer hours after school every day than others, 2.8 hours against about 2 hours respectively. The academically-oriented track is a strong conditioning factor showing that the human capital investment choice is made at an earlier stage of life especially in the case of students choosing a lyceum. As expected, the majority of students intending to enrol in university is attending a lyceum at the time of the survey (59 per cent). Students who intend to go to university are more informed about student loans than others.

4 Estimation Results

A major concern about the use of MNL is the assumption of the independence of irrelevant alternatives (IIA) that is implicit in the model itself. We test this assumption—that the addition or removal of an alternative will not change the relative selection probabilities of existing choices—by a Hausman test. Conditional on the model specification, the test does not reject the IIA assumption with p -values equal to 0.07 for “Yes”, 0.63 for “No” and 0.20 for “DK” implying that students perceive the three alternatives as distinct and weigh each alternative independently of the others.

The marginal effects of equation (3) derived from the MNL model produce coherent evidences about the university choice of high school leavers of Veneto (Table 3). The main findings of our analysis are that family background characteristics are generally not significant, except for few family characteristics, whereas individual characteristics of students account for most of the likelihood of going on to tertiary education.

Looking at the structure of the family, the size has a negative effect on the intention to invest in higher education, albeit the associated marginal effects are small and statistically significant at the 10 per cent level only for students who intend to go to work. As the number of family members increases the likelihood of enrolling in university decreases by 2 percentage points and the intention to go to work increases by 0.2 percentage points. Children living in single-parent families are more likely to have problems at school and less likely to enrol in tertiary education. In our sample, living in a single-parent family is not significantly associated with university choice. Further, the intra-family decision process as measured by “jointly decision making rule” is not a significant factor conditioning university choice.

Mother’s and father’s education are separately modelled by means of dummies for four levels of education—elementary, middle school, high school, and university where elementary is the reference category. In line with previous studies (Behrman and Rosenzweig

³In the Italian school system, the grade method ranges from 0 (fail) to 10 (excellent) with 6 as the passing grade. The level of math literacy in the Italian North-Eastern regions is significantly above the OECD average. In 2009, for math literacy Veneto is the fourth strongest Italian region (OECD 2010).

2002, Plug 2004), controlling for assortative mating, the mother's education is a relative weak determinant of university choice. Only children raised by mothers with a university degree are 14 percentage points more likely to enrol in university than those raised by mothers with elementary education. Mothers with degrees are also 13 percentage points less likely to have students who are undecided about their future. Whereas, all education levels attained by fathers are large and significant determinants of the three alternatives. Children brought up in families with well-educated fathers are 26 percentage points more likely to enrol in university and 25 percentage points less likely to be undecided than children whose fathers have elementary education. A father with a degree makes it slightly less likely (1 percentage point) that her child will work after school. After controlling for education, in the Veneto region the mother's and the father's working status do not exert a significant role in children's choice of university attendance.

A remarkable result consistent with other studies (Cameron and Heckman 1998, Cameron and Taber 2004, Carneiro and Heckman 2002, Checchi, Fiorio and Leonardi 2014, Løken 2010), but still controversial in the literature (Lochner and Monge-Naranjo 2012), is that family income has little effect on the intention to enrol in university. Looking at raw data (Table 1), differences in university enrolment intentions by family income are sizeable. In the estimation, when controlling for parental human capital, this gap weakens implying that students would invest in higher education regardless of their family income. Children from high income families are 9 percentage points more likely to attend university and 8 percentage points less likely to be undecided than students from low income families. In addition, the choice of going to work is not statistically correlated with either income quintile. On the other hand, family possessions, as measured by homeownership, significantly increase by about 8 percentage points the likelihood of enrolling in university and reduce by the same percentage the prospect to be undecided. These two results taken together suggest that the correlation between family income and university enrolment is the result of long-term liquidity constraints as proxied by housing tenure rather than short-term constraints faced by children at the time in which the university choice is made. It is not surprising that university choice is moderately affected by short-term liquidity constraints (Checchi, Fiorio and Leonardi 2014). This effect may be explained by the Italian university system, where fees are relatively low compared to other OECD countries and, further, the amount is based on means-testing procedures. In Veneto, the average fee of a public university is about 1,200 euros per year at 2009 constant price. The overall university costs are affordable also by less affluent children because, in general, university attendance is not compulsory making commuting a feasible strategy that can help students save on lodging costs.

The student's development of positive attitudes towards tertiary education can also be influenced by factors outside the family environment. We attempt to capture neighbour-

hood effects by controlling for whether children live in urban and/or residential areas. We find that children living in urban areas are 6 percentage points more likely to enrol in university than those living in non-urban areas. Living in urban areas also reduces the likelihood of indecision by the same amount. On the other hand, living in residential neighbourhoods does not have a statistical impact on university choice.

In relation to individual characteristics, gender is a significant determinant. Females have stronger preferences towards higher education than males. Being female increases by 7 percentage points the likelihood of investing in higher education and reduces by 6 percentage points the likelihood of indecision. Relatively fewer women intend to go to work after school. University choice may also be affected by social interactions of children with peers or parents (Lalive and Cattaneo 2009). In our analysis, children that do not interact with other persons in taking the university choice are about 11 percentage points more likely to enrol in university compared to children that interact with somebody. Interestingly, relatively few students who declare the influence of their parents intend to go to work.

Low job aspiration significantly reduces the likelihood of university enrolment, while it increases both the likelihood of going to work and be undecided. The declared reservation wage is a statistically significant factor determining the decision to join the labour market and indecision. The higher the reservation wage, the less likely it is that the student joins the labour market after school. On the other hand, there is a positive association between the likelihood of indecision and the declared reservation wage.

Students' beliefs are strong determinants of the choice of university enrolment. Agreement about the relevance of graduation to find a job or the desired job are significant factors. For example, the believe that a degree is necessary to find the desired job increases university choice by 18 percentage points, decreases indecision by 15 percentage points and the likelihood of seeking employment by 2 percentage points. Beliefs about the importance of graduation in order to attain a wage premium are not statistically significant in either group. This evidence suggests that in our sample university attendance decisions do not directly depend on the expected wage return, but rather on the availability and quality of employment.

Students' subjective expectations about labour market opportunities are significant determinants especially for students intending to enrol in university and for those undecided about their future. Expecting to lower personal aspirations in order to find a job reduces (increases) by 14 percentage points the likelihood of enrolling in university (being undecided). Children who have positive expectations about labour market opportunities, although encountering difficulties in finding a job, are more likely to enrol in university and less likely to be undecided. Confidence about the employment market significantly increases by 1 percentage point the likelihood of going to work.

Risk and time preferences account for a modest part of the likelihood of enrolling in university.⁴ Risk aversion is statistically significant, though at the 10 per cent level, for both university-oriented and undecided students. It decreases (increases) by 7 percentage points the likelihood of enrolling in university (indecision).

Student attitudes towards smoking or surfing the internet as the main leisure activity are not statistically associated with enrolment choice. The attitude to sport has a significant but small effect. Students that take part in sports activities outside school time are less likely to go to work after school (0.5 percentage points). The intensity of religious belief does play a role. Children with a medium religious intensity are less likely to enrol in university and more likely to be undecided than children with a low religious attachment.

In line with expectations, levels of school ability, as shown by school grades, skills in math and time devoted to studying, are significant factors shaping preferences for higher education. As expected, bad school performances are negatively associated with this choice. Students who repeated at least one year of high school are 9 percentage points less likely to enrol in university than students who did not repeat. Moreover, failed students are 8 percentage points more likely to be undecided and 1 percentage point to go to work. On the other hand, good overall school and math marks increase (decrease) the likelihood of enrolling (being undecided). Student effort, as measured by hours devoted to study, are strongly and positively associated with the choice of enrolling in university. Effort also decreases the likelihood of indecision about the future. As is reasonable to expect, early school tracking decisions play an important role. Children enrolled in university-oriented high schools, called lyceum, have a higher likelihood of enrolling in university (40 percentage points) and a lower likelihood (37 percentage points) of being undecided than children attending professional or vocational curricula. School like the lyceum are unlikely to produce students going straight into work because their aspirations and skills are higher than the jobs available to school leavers.

4.1 Sensitivity Analysis: Do Income and Gender Matter?

To further explore the effect of liquidity constraints on university choice, we carry out a sequential regression analysis and find that coefficients of income quintiles lose significance once we control for parental human capital suggesting that parental education subsumes the effect of family income. In addition, we use different specifications for family income. We run an MNL model with a logarithmic transformation of income and an MNL model with the logarithmic transformation together with its squared term to control for nonlinear relationships in the data (Løken, Mogstad and Wiswall 2012). Neither specification

⁴For details about the elicitation method see the online Appendix and Menon and Perali (2009).

shows a significant association between family income and university choice.⁵

We also investigate whether family income is a predictor of other choices related to university attendance. In particular, we estimate a nested logit model to investigate which type of university the “yes-university” students desire to attend. Students can choose among the following three alternatives: a) a university close to home, b) their most ideal university, and c) other university characteristics. Family income has a small effect even on these second-stage choices confirming the evidence found in the MNL estimation (Table B.1). Interestingly, risk preferences exert a robust effect on both the choices of the university close to home and other characteristics. Risk loving has a strong negative effect on the choice of the university close to home and a positive effect when looking for other university characteristics. Time preferences do not affect these three types of university choice.

We then study the possible association between family income and the choice of university major. Using a nested logit model, we study the choice of scientific and non-scientific majors. The scientific major includes subjects such as math, medicine, physics, chemistry, engineering. The division between these two majors is due to the fact that overall costs of scientific majors are in general higher than non-scientific curricula. Again, no strong income effects are detected (Table B.2).

As a final check of robustness, we estimate an MNL model for the subsample of girls and boys to see whether there are distinctive gender differences. We find that choices of girls are mainly correlated with their personal characteristics (B.3). Interestingly, parental human capital does not play a role in predicting their choice. Moreover, choices about their future after school are not associated with subjective expectations about labour market opportunities. By contrast, boys’ university enrolment is strongly affected both by their family circumstances, in particular by their father’s education, and personal characteristics (B.4).

5 Counterfactual Analyses

This section deals with two counterfactual exercises. First, we predict what the university enrolment rate would be if non-sporty children had the characteristics of children who do sport after school time. As a second hypothetical analysis, we estimate the university choice model taking undecided as if they were missing responses.

5.1 Would Playing Sport Increase the University Enrolment Rate?

Participation in sports activities enhances cognitive and non-cognitive abilities of children that, in turn, increase their educational attainment. Sport has direct and indirect effects

⁵For reasons of space, these estimations are not reported but are available upon request.

on educational attainment. Time spent on sport can reduce time spent on activities harmful for school results, such as watching television, drinking, drug use, and criminal activities. Involvement in sports activities is associated with better mental health (Dunn, Trivedi and O’Neal 2001, Jewett *et al.* 2014, Scully *et al.* 1998), which increases school performance. In addition, sport improves the soft skills of children, such as motivation, competitiveness, self-confidence, and self-esteem, which play a major role in educational attainment (Heckman 2008, Heckman and Kautz 2012, Heckman *et al.* 2010, Koch, Nafziger and Nielsen 2014, Pfeifer and Cornelißen 2010).

In our data (Table C.1), children who allocate their spare time mainly to sports activities have a higher propensity (56 per cent) to enrol in university and a lower propensity (17 per cent) to work than children who do not play sport (52 per cent and 21 per cent, respectively). In addition, we estimate a significant, though modest, reduction in the likelihood of going to work for children who play sport. Given this evidence, we carry out an experiment based on a counterfactual analysis such as “what would the probability of enrolling in university have been if non-sporty children’s characteristics had been equal to sporty children’s characteristics?”⁶

The hypothetical probabilities associated with the three university choices (Yes - No - DK) are derived from the estimates of a weighted MNL model. The weights employed in the estimation, measuring the probability of being a sporty child, are obtained by the estimation of a latent model. The latent variable S_i^* is assumed to be linearly related to a vector of observed characteristics X_i^S of child i . The likelihood of engaging in sport is estimated using a probit model. We consider various specifications for the observed vector X_i^S . The basic vector of child’s characteristics comprises gender, child’s health status and a dummy equal to one if the child smokes (Model 1). We then sequentially add variables that can reasonably be associated with the choice of doing sport and help balance the data. In Model 2 we add measures of propensity for indebtedness, time devoted to leisure activities and to study, propensity for saving, risk preferences and whether the child attends a lyceum. In Model 3 we add variables that control for school ability (math grade), social interaction, parental influence, individual aspirations and subjective expectations of labour market opportunities. In Model 4 we also control for family background variables. In Model 5 we add geographical controls. Statistical descriptions of the observed characteristics comprised in X_i^S are reported in the online Appendix.

The conditional probabilities of taking part in sport $P(S_i = 1 | X_i^S, \beta^S)$, given the observed covariates X_i^S and coefficients β^S , are used to derive the propensity weight for

⁶DiNardo, Fortin and Lemieux (1996), Autor, Katz and Kearney (2008), and Altonji, Bharadwaj and Lange (2012) conduct a similar counterfactual analysis in the context of wage distribution analysis and labour market success.

each observation i as

$$w_i = \frac{P(S_i = 1 | X_i^S, \beta^S)}{1 - P(S_i = 1 | X_i^S, \beta^S)} \text{ for } S_i = 0, \quad (4)$$

$$w_i = 1 \text{ for } S_i = 1. \quad (5)$$

The propensity weight w_i measures the relative odds that a child with characteristics X_i^S is drawn from the subsample of sporty children. These weights are employed in the estimation of a weighted university choice model. Using weights enables adjustment of differences between observable characteristics of sporty and non-sporty subsamples of children. Table C.4 shows how effectively weights adjust mean differences between the two subsamples.

Then, for child i the probability of choosing alternative j , $P(E_i = j | X_i, \tilde{\beta}_j)$, predicted by estimating a weighted MNL model, yields the hypothetical university choice E_i^H assigning the following value

$$E_i^H = j \quad \text{if } P(E_i = j | X_i, \tilde{\beta}_j) = \max_k P(E_i = k | X_i, \tilde{\beta}_k), \quad (6)$$

where $\tilde{\beta}_j$ is the vector of coefficients obtained by the weighted MNL model with $j, k = 1, 2, 3$. The empirical strategy to estimate the propensity weight of equation (4) follows the directions by Dehejia and Wahba (2002), Guo and Fraser (2014), Morgan and Todd (2008), Rosenbaum and Robin (1983, 1984, 1985) and the corresponding results and robustness tests are shown in the online Appendix. To carry out our counterfactual analysis, we use Model 5 because minimizes the imbalance of the observed variables employed in the university analysis, conditional on the estimated propensity weight.

The message of this counterfactual analysis is that sport plays a positive role in promoting educational attainments. In particular, it seems to have the effect of decreasing the proportion of undecided children. Looking at Figure 1, we see that if non-sporty children had played sports, in more than 7 per cent of cases they would be less undecided about their future. This decrease would translate in both an increase in “Yes” and “No” choices, and the “Yes” choice would increase slightly more than the “No” (4.25 per cent and 3 per cent, respectively). The effects are more remarkable when conditioning on specific characteristics of the child. For example, in Figure 2 if sport were played by children whose fathers have a high education then, restricted to that subsample, there would be an increase of about 10 per cent of the “Yes” choice and a reduction of about 1 per cent of the “No”. Figure 3 shows the joint distribution of educational choices and family income. Looking at the figure, children of wealthy families would gain more by playing sport compared to poor children. This hypothetical educational pattern might be the result of the Italian sport system where sport is mainly carried out after school in

private sports facilities whose costs could be a constraint for disadvantaged families. This interpretation is supported by the estimated positive correlation between family income and sport participation shown in Table C.3. Another interesting effect is shown in Figure 4 where non-sporty girls would increase by 6 per cent their university enrolment rate if they played sport.

5.2 Handling Undecided Responses as Missing Values

At the time of data collection, 26.16 per cent of students were undecided about their future after school. At the beginning of the academic year the eventual choice of undecided students would be either enrolling in university or going to work. We think about the DK response as a measurement problem due to the timing of interview implying that the *true* university choices are either “Yes, I will enrol in university” or “No, I will go to work”. We carry out a counterfactual experiment to study what predicts university choice considering that DK responses are not legitimate answers to be modelled but rather missing values to be imputed. We further assume that DK responses to the university choice can be thought of as data missing at random (MAR) (Little and Rubin 1987, Rubin 1976, Rubin, Stern and Vehovar 1995). In our context, the MAR assumption might be interpreted as if respondents use the DK alternative to conceal their decision. Thus, employing observable information from relevant covariates available in the questionnaire would provide accurate predictions for imputation of DK responses without the need for sophisticated probability models that deal with non-ignorable missing mechanisms (Rubin, Stern and Vehovar 1995).⁷

We define a binary variable equal to one if the child intends to enrol in university, zero if she intends to go to work and recode the DK responses as missing values. Under the assumption of ignorability of the missing-data mechanism, we use the multiple imputation (MI) procedure to estimate the university choice model with missing data. The MI procedure generates several copies of the dataset each comprising different imputed values for the DK responses maintaining in this way the stochastic nature of the missing information. The university choice analysis is then carried out on each dataset yielding multiple sets of coefficient estimates and standard errors which are subsequently combined into a single set of results. The covariates adopted in the MI model for the imputation analysis are the set of X_i plus auxiliary variables that we deem appropriate to model the university choice and the indecision of DK children. We add a variable measuring whether children are uncertain about the possibility of getting a final high school grade

⁷Researchers are sometimes afraid of imputing the value of dependent variables. However, under the ignorability assumption of the missing-data mechanism, imputing the outcome does not harm estimations especially when there are good auxiliary variables in the imputation model (Graham 2009, Johnson and Young 2011). In addition, data-collecting organizations release public datasets that provide imputations for missing variables that eventually are the choice outcomes of empirical analyses.

above 80 over 100. This variable signals indecision of children and might be related to the missing data mechanism. We also include a variable measuring whether the student works, a binary variable equal to one if the student attends a vocational school and has an average grade equal or below six, and two binary variables measuring student attitudes towards student loans: a variable equal to one if the student thinks of student loans as a good investment for future life and a second variable equal to one if the student thinks of student loans as a financial burden. These variables are mainly intended to capture the intention of children about their future. As shown in Table 5, the auxiliary variables chosen for imputation have distributions that differ between the respondents (Yes/No) and nonrespondents (DK) helping the robustness of the data imputation process.

The results of the linear probability model (Table 6) resemble the marginal effects of the benchmark analysis (Table 3). Handling DK responses as missing values in general does not change the effects of family circumstances on university choice. Parental human capital, especially the father’s education, is a strong predictor of the intention to enrol in university even after missing value correction. Interestingly, family income maintains the pattern of the benchmark estimation but now becomes a stronger predictor, while home-ownership loses explanatory power. In this estimation, children belonging to the fourth and fifth income quintile are more likelihood of going to university than those belonging to the second quintile. Unlike the findings of the benchmark estimates, children of self-employed fathers are more likelihood of going to university than children of fathers who are employees. The estimate also provides associations between personal characteristics of children and their intention to enrol in university similar to the benchmark model. Our findings confirm that gender, parental influence, aspirations, beliefs, subjective expectations and school abilities are all strong predictors of the intention to go to university. In addition, as in the MNL model, risk and time preferences are not significantly associated with university choice.

6 Conclusions

This study examines the associations between the intention to go to higher education and a large set of determinants of interest. We use prospective data comprising measures of family background, including family structure, family income, family possessions, education and the working status of parents, and geographical indicators of residence. Our dataset also includes relevant measures of personal characteristics of students. We collect the subjective expectations of children in relation to labour market opportunities, their job aspirations and reservation wage. We also elicit non-cognitive abilities, such as risk and time preferences of children, in a “lab-in-the-field” environment. No less important, our information set records measures of school ability and children effort.

Inspection of raw data reveals that differences in university enrolment by family income may be sizeable. Children with affluent parents show a higher propensity to enter tertiary education than those from the bottom of the income distribution. However, in our empirical analysis this gap weakens when controlling for parental human capital. On the other hand, family possessions, a proxy for permanent income, play a significant role even after controlling for family income, parental education and the personal characteristics of children. These insights are in line with several studies (Cameron and Heckman 1998, Carneiro and Heckman 2002) that conclude that short-term constraints at the high school or university ages are not an important determinant of university attendance. As remarked by Carneiro and Heckman (2002), the correlation between family income and university enrolment is the result of short-term and long-term liquidity constraints. Families with high income in the adolescent years have more opportunities to invest in the quality of education of their children starting at an early stage of the child's development and to produce the cognitive and non-cognitive skills desirable to benefit from higher education. This evidence has important implications for policy programs aimed at increasing access to higher education.

Another remarkable finding is that, controlling for assortative mating, the father's and not the mother's educational background impacts significantly on the intention of children to enter tertiary education. This suggests that the intergenerational transmission of human capital is for the most part channeled through the father's education. Interestingly, the risk and time preferences of children do not affect the intentions to enter higher education. This may be explained by the fact that students do not perceive the investment in higher education as a risky choice presumably because families insure their children against the risk of the investment in tertiary education. Our empirical analysis shows that these results are equally robust when handling undecided responses as missing values.

Our estimates lend support to the importance of cognitive abilities of children, as measured by past and current school performance and curriculum choices, in determining university enrolment. These findings are in line with recent evidence showing that skill investments are complementary over the life-cycle and that a failure to make adequate investments during early life reduces the probability in later years to invest in human capital through tertiary education (Cunha, Heckman and Schennach 2010). In addition, university choice is strongly associated with the subjective expectations of children about the labour market and their job aspirations. The university choice of children is significantly affected by positive expectations about finding a job after studying. High school leavers do not expect much in terms of higher wages, but mainly perceive higher education as a means for personal development or to get the desired job. The reservation wage is informative for the choice to go to work, suggesting that it is a valid proxy of subjective returns to education. This is in sharp contrast with the general belief that,

for a given rate of time preference and presuming perfect foresight about entry, the wage premium is the most important benefit of investing in education (Boarini and Strauss 2007). Improving the efficiency of the labour market and recognizing merit are, therefore, a fundamental medium-term policy to make tertiary education more attractive even in northern Italy where the recession has been less severe than elsewhere.

Family background and other environmental circumstances are beyond individual control, while personal characteristics, such as effort, are under the control of the children and for which they can be held responsible. With Roemer (1985) and Fleurbaey (2008), we share the view that a policy that is effective in reducing the influence of objective circumstances, such as family background, increases equality of opportunity. An educational policy that reduces the impact of such circumstances can be expected to improve the distribution of opportunities across the student population. It is hence crucial for policy-makers to adopt appropriate policy actions aimed at equalizing opportunities across the student population and removing barriers to education in order to make students fully responsible for their achievements as an outcome of their sole efforts. One of the main conclusions that can be drawn from our evidence highlights the relative importance of individual characteristics of children compared to family circumstances. Is this evidence sufficient to conclude that public action should not be called for? The answer may be positive for student effort but it is less so for personality traits such as the propensity to engage in sports activities whose relevance is shown by our counterfactual exercise.

References

- [1] AlmaLaurea (2011): Condizione Occupazionale dei Laureati, In *XII Indagine* (2010).
- [2] Altonji, J. G., P. Bharadwaj and F. Lange (2012): “Changes in the Characteristics of American Youth: Implications for Adult Outcomes,” *Journal of Labor Economics*, 30(4): 783-828.
- [3] Andersen, S., G. W. Harrison, M. I. Lau and E. E. Rutström (2008): “Eliciting Risk and Time Preferences,” *Econometrica*, 76(3): 583-618.
- [4] Attanasio, O. P. and K. M. Kaufmann (2014): “Education Choices and Returns to Schooling: Mothers’ and Youths’ Subjective Expectations and Their Role by Gender,” *Journal of Development Economics*, 109: 203-216.
- [5] Autor, D. H., L. F. Katz and M. S. Kearney (2008): “Trends in U.S. Wage Inequality: Revising the Revisionists,” *Review of Economics and Statistics*, 90(2): 300-323.
- [6] Becker, G. S. (1964): *Human Capital*, New York: Columbia University Press.
- [7] Behrman, J. R. and M. R. Rosenzweig (2002): “Does Increasing Women’s Schooling Raise the Schooling of the Next Generation?” *American Economic Review*, 92(1): 323-334.
- [8] Belzil, C. and M. Leonardi (2007): “Can Risk Aversion Explain Schooling Attainments? Evidence from Italy,” *Labour Economics*, 14: 957-970.
- [9] _____ (2013): “Risk Aversion and Schooling Decisions,” *Annals of Economics and Statistics*, 111/112: 35-70.
- [10] Betts, J. R. (1996): “What Do Students Know About Wages? Evidence from a Survey of Undergraduates,” *Journal of Human Resources*, 31(1): 27-56.
- [11] Boarini, R. and H. Strauss (2007): “The Private Internal Rates of Return to Tertiary Education: New Estimates for 21 OECD Countries,” OECD Economics Department Working Papers, No. 591, OECD Publishing.
- [12] Brodaty, T., R. J. Gary-Bobo and A. Prieto (2014): “Do Risk Aversion and Wages Explain Educational Choices?” *Journal of Public Economics*, 117: 125-148.
- [13] Cameron, S. V. and J. J. Heckman (1998): “Life Cycle Schooling and Dynamic Selection Bias: Models and Evidence for Five Cohorts of American Males,” *Journal of Political Economy*, 106(2): 262-311.

- [14] Cameron, S. V. and C. R. Taber (2004): “Estimation of Educational Borrowing Constraints Using Returns to Schooling,” *Journal of Political Economy*, 112(1): 132-183.
- [15] Carneiro, P. and J. J. Heckman (2002): “The Evidence on Credit Constraints in Post-Secondary Schooling,” *Economic Journal*, 112(482): 705-734.
- [16] Castillo, M., P. Ferraro, J. L. Jordan and R. Petrie (2011): “The Today and Tomorrow of Kids: Time Preferences and Educational Outcomes of Children,” *Journal of Public Economics*, 95(11-12): 1377-1385.
- [17] Checchi, D., C. V. Fiorio and M. Leonardi (2014): “Parents’ Risk Aversion and Children’s Educational Attainment,” *Labour Economics*, 30: 164-175.
- [18] Chowa, G. A. N., R. D. Masa, C. J. Wretman and D. Ansong (2013): “The Impact of Household Possessions on Youth’s Academic Achievement in the Ghana Youthsave Experiment: A Propensity Score Analysis,” *Economics of Education Review*, 33(1): 69-81.
- [19] Coller, M. and M. B. Williams (1999): “Eliciting Individual Discount Rates,” *Experimental Economics*, 2(2): 107-127.
- [20] Cunha, F., J. J. Heckman and S. M. Schennach (2010): “Estimating the Technology of Cognitive and Noncognitive Skill Formation,” *Econometrica*, 78(3): 883-931.
- [21] De la Fuente, A. and J. F. Jimeno (2005): “The Private and Fiscal Returns to Schooling and the Effect of Public Policies on Private Incentives to Invest in Education: A General Framework and Some Results for the Eu,” CESifo Working Paper Series 1392, CESifo Group Munich.
- [22] Dehejia, R. H. and S. Wahba (2002): “Propensity Score-Matching Methods for Non-experimental Causal Studies Full Access,” *Review of Economics and Statistics*, 84(1): 151-161.
- [23] Delavande, A. and B. Zafar (2014): “University Choice: The Role of Expected Earnings, Non-Pecuniary outcomes and Financial Constraints,” Working Paper No. 2014-38, Institute for Economic and Social Research, Essex, UK.
- [24] DiNardo, J., N. Fortin and T. Lemieux (1996): “Labor Market Institutions and the Distribution of Wages, 1973-1993: A Semi-Parametric Approach,” *Econometrica*, 64(5): 1001-1045.
- [25] Dunn, A., M. Trivedi and H. O’Neal (2001): “Physical Activity Dose-Response Effects on Outcomes of Depression and Anxiety,” *Medicine & Science in Sports & Exercise*, 33(6): S587-S597.

- [26] Fleurbaey, M. (2008): *Fairness, Responsibility, and Welfare*, Oxford: Oxford University Press.
- [27] Frederick, S., G. Loewenstein and T. O’Donoghue (2002): “Time Discounting and Time Preference: A Critical Review,” *Journal of Economic Literature*, 40(2): 351-401.
- [28] Golsteyn, B. H. H., H. Gronqvist and L. Lindahl (2014): “Adolescent Time Preferences Predict Lifetime Outcomes,” *Economic Journal*, 124(580): F739–F761.
- [29] Graham, J. W. (2009): “Missing Data Analysis: Making It Work in the Real World,” *Annual Review of Psychology*, 60(1): 549-576.
- [30] Guo, S. Y. and M. W. Fraser (2014): *Propensity Score Analysis: Statistical Methods and Applications*, 2nd Edition, USA: Sage.
- [31] Harrison, G. W., M. I. Lau and M. B. Williams (2002): “Estimating Individual Discount Rates in Denmark: A Field Experiment,” *American Economic Review*, 92(5): 1606-1617.
- [32] Heckman, J. J. (2008): “Schools, Skills, and Synapses,” *Economic Inquiry*, 46(3): 289-324.
- [33] Heckman, J. J. and T. Kautz (2012): “Hard Evidence on Soft Skills,” *Labour Economics*, 19(4): 451-464.
- [34] _____ (2013): “Fostering and Measuring Skills: Interventions That Improve Character and Cognition,” IZA Discussion Paper No. 7750.
- [35] Heckman, J. J., S. H. Moon, R. Pinto, P. A. Savelyev and A. Yavitz (2010): “The Rate of Return to the HighScope Perry Preschool Program,” *Journal of Public Economics*, 94(1-2): 114-128.
- [36] Heckman, J. J., R. Pinto and P. Savelyev (2013): “Understanding the Mechanisms through Which an Influential Early Childhood Program Boosted Adult Outcomes,” *American Economic Review*, 103(6): 2052-2086.
- [37] Heckman, J. J. and Y. Rubinstein (2001): “The Importance of Noncognitive Skills: Lessons from the Ged Testing Program,” *American Economic Review*, 91(2): 145-149.
- [38] Holt, C. A. and S. K. Laury (2002): “Risk Aversion and Incentive Effects,” *American Economic Review*, 92(5): 1644–1655.

- [39] Invalsi (2009): “Le Competenze in Lettura, Matematica e Scienze degli Studenti Quindicenni Italiani,” In *Rapporto Nazionale Pisa 2009*.
- [40] Jewett, R., C. M. Sabiston, J. Brunet, E. K. O’Loughlin, T. Scarapicchia and J. O’Loughlin (2014): “School Sport Participation During Adolescence and Mental Health in Early Adulthood,” *Journal of Adolescent Health*, 55(5): 640-644.
- [41] Johnson, D. R. and R. Young (2011): “Toward Best Practices in Analyzing Datasets with Missing Data: Comparisons and Recommendations,” *Journal of Marriage and Family*, 73(5): 926–945.
- [42] Koch, A., J. Nafziger and H. S. Nielsen (2014): “Behavioral Economics of Education,” *Journal of Economic Behavior & Organization*, forthcoming.
- [43] Lalive, R. and A. Cattaneo (2009): “Social Interactions and Schooling Decisions,” *Review of Economics and Statistics*, 91(3): 457-477.
- [44] Levhari, D. and Y. Weiss (1974): “The Effect of Risk on the Investment in Human Capital,” *American Economic Review*, 64(6): 950-963.
- [45] Levitt, S. D. and J. A. List (2007): “What Do Laboratory Experiments Measuring Social Preferences Tell Us About the Real World,” *Journal of Economic Perspectives*, 21(2): 153-174.
- [46] _____ (2009): “Field Experiments in Economics: The Past, the Present, and the Future,” *European Economic Review*, 53(1): 1-18.
- [47] List, J. A. (2009): “An Introduction to Field Experiments in Economics,” *Journal of Economic Behavior & Organization*, 70(3): 439-442.
- [48] Little, R. J. A. and D. B. Rubin (1987): *Statistical Analysis with Missing Data*, New York: John Wiley.
- [49] Lochner, L. and A. Monge-Naranjo (2012): "Credit Constraints in Education," *Annual Review of Economics*, 4: 225-256.
- [50] Løken, K. V. (2010): “Family Income and Children’s Education: Using the Norwegian Oil Boom as a Natural Experiment,” *Labour Economics*, 17(1): 118-129.
- [51] Løken, K. V., M. Mogstad and M. Wiswall (2012): “What Linear Estimators Miss: The Effects of Family Income on Child Outcomes,” *American Economic Journal: Applied Economics*, 4(2): 1-35.
- [52] Manski, C. F. (1990): “The Use of Intentions Data to Predict Behavior: A Best-Case Analysis,” *Journal of American Statistical Association*, 85(412): 934-940.

- [53] _____ (1993): “Adolescent Econometricians: How Do Youth Infer the Returns to Schooling?” In *Studies of Supply and Demand in Higher Education*, edited by M. Roths.
- [54] Menon, M. and F. Perali (2009): “Eliciting Risk and Time Preferences in Field Experiments: Are They Related to Cognitive and Non-Cognitive Outcomes? Are Circumstances Important?” *Rivista Internazionale di Scienze Sociali*, 7(3-4): 561-627.
- [55] Morgan, S. L. and J. J. Todd. (2008): “A Diagnostic Routine for the Detection of Consequential Heterogeneity of Causal Effects,” *Sociological Methodology*, 38(1): 231-281.
- [56] OECD (2010): *Education at a Glance*, Paris: OECD.
- [57] Page, L., L. L. Garboua and C. Montmarquette (2007): “Aspiration Levels and Educational Choices: An Experimental Study,” *Economics of Education Review*, 26(6): 748-758.
- [58] Pfeifer, C. and T. Cornelißen (2010): “The Impact of Participation in Sports on Educational Attainment—New Evidence from Germany,” *Economics of Education Review*, 29(1): 94-103.
- [59] Plug, E. (2004): “Estimating the Effect of Mother’s Schooling on Children’s Schooling Using a Sample of Adoptees,” *American Economic Review*, 94(1): 358-368.
- [60] Regione Veneto (2011): *La Qualità Educativa in Veneto*, Sezione Sistema Statistico Regionale.
- [61] Roemer, J. E. (1985): “Equality of Talent,” *Economics and Philosophy*, 1(2): 151-188.
- [62] Rosenbaum, P. R. and D. B. Rubin (1983): “The Central Role of the Propensity Score in Observational Studies for Causal Effects,” *Biometrika*, 70(1): 41-55.
- [63] _____ (1984): “Reducing Bias in Observational Studies using Sub-classification on the Propensity Score,” *Journal of the American Statistical Association*, 79: 515-524.
- [64] _____ (1985): “The Bias Due to Incomplete Matching,” *Biometrics*, 41(1): 103-116.
- [65] Rubin, D. B. (1976): “Inference and Missing Data,” *Biometrika*, 63(3): 581-590.
- [66] Rubin, D. B., H. S. Stern and V. Vehovar (1995): “Handling “Don’t Know” Survey Responses: The Case of the Slovenian Plebiscite,” *Journal of the American Statistical Association*, 90(431): 822-828.

- [67] Scully, D., J. Kremer, M. M. Meade, R. Graham and K. Dudgeon (1998): "Physical Exercise and Psychological Well Being: A Critical Review," *British Journal of Sports Medicine*, 32(2).
- [68] Weiss, Y. (1971): "Investment in Graduate Education," *American Economic Review*, 61(5): 833-853.
- [69] _____ (1972): "The Risk Element in Occupational and Educational Choices," *Journal of Political Economy*, 80(6): 1203-1213.

Variable Definition, Descriptive Statistics and Results

Variable Definition

University choice

The dependent variable “University choice” is elicited with the following question “Do you intend to enrol in university?” with three mutually exclusive answers “Yes, I will enrol in university” - “No, I will go to work”- “I have not yet decided”.

Family background variables

- *Family size* is the number of family members.
- *Single parent* is a dummy equal to one if the student lives in a family with one parent.
- *Joint decision making rule* is a dummy equal to one if decisions are taken by parents and children jointly.
- Father and mother’s education:
 - *elementary* is a dummy equal to one if the father/mother highest educational level is elementary school;
 - *middle school* is a dummy equal to one if the father/mother highest educational level is middle school;
 - *high school* is a dummy equal to one if the father/mother highest educational level is high school;
 - *university* is a dummy equal to one if the father/mother highest educational level is university or more.
- Father and mother’s working status:
 - *working father/mother* is a dummy equal to one if the father/mother works;
 - *self-employed father* is a dummy equal to one if the father is self-employed.
- Family income:
 - *1st quintile* is a dummy equal to one if family income belongs to the first quintile of the income distribution;
 - *2nd quintile* is a dummy equal to one if family income belongs to the second quintile of the income distribution;

- *3rd quintile* is a dummy equal to one if family income belongs to the third quintile of the income distribution;
 - *4th quintile* is a dummy equal to one if family income belongs to the fourth quintile of the income distribution;
 - *5th quintile* is a dummy equal to one if family income belongs to the last quintile of the income distribution.
- *Homeownership* is a dummy equal to one if the family owns the house either outright or through a mortgage.
 - *Urban* is a dummy equal to one if living in an urban area.
 - *Residential* is a dummy equal to one if living in a residential area.

Individual Characteristics of Students

- *Female* is a dummy equal to one if the student is female.
- *No interaction* is a dummy equal to one if the student interacted with nobody in making her/his university choice.
- *Parental influence* is a dummy equal to one if parents had some degree of influence on the student's university choice.
- *Low job aspiration* is a dummy equal to one if the student aspires to unskilled jobs.
- *Reservation wage* measures the minimum monthly income (net of taxes) that the student would like to earn to enter the labour market and quit her/his studies.
- Graduation is valuable to:
 - *find a job* is a dummy equal to one if the student believes that university degree is useful to find a job;
 - *find the desired job* is a dummy equal to one if the student believes that university degree is useful to find the desired job;
 - *find a well-paid job* is a dummy equal to one if the student believes that university degree is useful to find a well-paid job.
- Labour market opportunities:
 - *scale down* is a dummy equal to one if the student expects to find a job but she/he has to scale down her/his ambitions;

- *try hard* is a dummy equal to one if the student expects to find a job after having experience many difficulties;
 - *confident* is a dummy equal to one if the student expects to find a job easily;
 - *pessimistic* is a dummy equal to one if the student expects to not find a job.
- Risk preferences:
 - *averse* is a dummy equal to one if the student is risk averse;
 - *neutral* is a dummy equal to one if the student is risk neutral;
 - *lover* is a dummy equal to one if the student is risk lover.
- Time preferences:
 - *low* is a dummy equal to one if the time discount rate of the student is low, meaning that she/he is patient;
 - *medium* is a dummy equal to one if the time discount rate of the student is medium;
 - *high* is a dummy equal to one if the time discount rate of the student is high, meaning that she/he is impatient.
- Religious intensity:
 - *low* is a dummy equal to one if the student is barely religious;
 - *medium* is a dummy equal to one if the student is fairly religious;
 - *high* is a dummy equal to one if the student is very religious.
- *Smoker* is a dummy equal to one if the student smokes.
 - *Sport* is a dummy equal to one if the main leisure activity is playing a sport.
 - *Internet* is a dummy equal to one if the main leisure activity is surfing the internet.
 - *Grade retention* is a dummy equal to one if the student repeated at least one school grade.
 - *Previous year mark* is the average mark of the previous school year.
 - *Math mark* is the average mark in math of the ongoing school year.
 - *Study hours* are the time (hours) that the student devotes to study.

- *Lyceum* is a dummy equal to one if the student attends a university-oriented high school.
- *Student loan information* is a dummy equal to one if the student knows about general student loan programs.

Descriptive Statistics

Table 1: Family Background and Geographical Location by University Choice

| Do you intend to enrol in university? No. of observations (%) | Yes | | No | | I don't know | |
|--|-------|---------|----------|---------|--------------|---------|
| | 1,454 | (53.79) | 542 | (20.05) | 707 | (26.16) |
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Family background | | | | | | |
| Family size | 4 | 0.939 | 4.080* | 1.120 | 4.090** | 1.050 |
| Single parent | 0.093 | 0.290 | 0.083 | 0.276 | 0.099 | 0.299 |
| Joint decision making rule | 0.387 | 0.487 | 0.363 | 0.481 | 0.345* | 0.476 |
| Father's education: | | | | | | |
| Elementary | 0.033 | 0.179 | 0.137*** | 0.344 | 0.107*** | 0.310 |
| Middle school | 0.358 | 0.479 | 0.607*** | 0.489 | 0.511*** | 0.500 |
| High school | 0.375 | 0.484 | 0.208*** | 0.407 | 0.306*** | 0.461 |
| University | 0.235 | 0.424 | 0.048*** | 0.214 | 0.076*** | 0.266 |
| Mother's education: | | | | | | |
| Elementary | 0.041 | 0.199 | 0.107*** | 0.309 | 0.096*** | 0.295 |
| Middle school | 0.350 | 0.477 | 0.627*** | 0.484 | 0.533*** | 0.499 |
| High school | 0.387 | 0.487 | 0.227*** | 0.419 | 0.289*** | 0.453 |
| University | 0.221 | 0.415 | 0.039*** | 0.193 | 0.082*** | 0.275 |
| Working father | 0.922 | 0.268 | 0.884*** | 0.321 | 0.884*** | 0.320 |
| Self-employed father | 0.387 | 0.487 | 0.297*** | 0.457 | 0.347* | 0.476 |
| Working mother | 0.739 | 0.440 | 0.609*** | 0.488 | 0.634*** | 0.482 |
| Income quintile: | | | | | | |
| 1st | 0.162 | 0.368 | 0.264*** | 0.441 | 0.231*** | 0.421 |
| 2nd | 0.162 | 0.369 | 0.253*** | 0.435 | 0.238** | 0.426 |
| 3rd | 0.196 | 0.397 | 0.190 | 0.393 | 0.215 | 0.411 |
| 4th | 0.210 | 0.407 | 0.196 | 0.397 | 0.184 | 0.388 |
| 5th | 0.270 | 0.444 | 0.098*** | 0.297 | 0.133*** | 0.340 |
| Homeownership | 0.884 | 0.321 | 0.845** | 0.362 | 0.844*** | 0.363 |
| Geographical location | | | | | | |
| Urban | 0.353 | 0.478 | 0.221*** | 0.416 | 0.235*** | 0.424 |
| Residential | 0.706 | 0.456 | 0.577*** | 0.494 | 0.603*** | 0.490 |
| Belluno | 0.047 | 0.211 | 0.031 | 0.174 | 0.026** | 0.158 |
| Padua | 0.146 | 0.354 | 0.066*** | 0.249 | 0.098*** | 0.297 |
| Rovigo | 0.030 | 0.171 | 0.114*** | 0.319 | 0.065*** | 0.247 |
| Treviso | 0.100 | 0.301 | 0.113 | 0.316 | 0.112 | 0.315 |
| Venice | 0.126 | 0.332 | 0.124 | 0.329 | 0.134 | 0.341 |
| Verona | 0.324 | 0.468 | 0.310 | 0.463 | 0.277** | 0.448 |
| Vicenza | 0.226 | 0.419 | 0.242 | 0.429 | 0.289*** | 0.453 |

Notes: * indicates differences with “yes” alternative that are statistically significant at 10%, ** at 5%, and *** at 1%.

Table 2: Individual Characteristics of Students by University Choice

| Do you intend to enrol in university? | Yes | | No | | I don't know | |
|---------------------------------------|-------|---------|----------|---------|--------------|---------|
| No. of observations (%) | 1,454 | (53.79) | 542 | (20.05) | 707 | (26.16) |
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Female | 0.547 | 0.498 | 0.375*** | 0.484 | 0.484*** | 0.500 |
| No interaction | 0.480 | 0.500 | 0.546*** | 0.498 | 0.362*** | 0.481 |
| Parental influence | 0.697 | 0.460 | 0.511*** | 0.500 | 0.672 | 0.470 |
| Low job aspiration | 0.063 | 0.244 | 0.266*** | 0.442 | 0.160*** | 0.367 |
| Reservation wage (log) | 7.380 | 0.451 | 7.020*** | 0.027 | 7.380 | 0.394 |
| Graduation is valuable to: | | | | | | |
| Find a job | 0.627 | 0.484 | 0.203*** | 0.403 | 0.405*** | 0.491 |
| Find the desired job | 0.749 | 0.434 | 0.236*** | 0.425 | 0.523*** | 0.500 |
| Find a well-paid job | 0.617 | 0.486 | 0.351*** | 0.478 | 0.504*** | 0.500 |
| Labour market opportunities: | | | | | | |
| Scale down | 0.064 | 0.245 | 0.135*** | 0.342 | 0.185*** | 0.389 |
| Try hard | 0.517 | 0.500 | 0.358*** | 0.480 | 0.477* | 0.500 |
| Confident | 0.338 | 0.473 | 0.439*** | 0.497 | 0.235*** | 0.424 |
| Pessimistic | 0.082 | 0.274 | 0.068 | 0.252 | 0.103* | 0.305 |
| Risk preferences: | | | | | | |
| Averse | 0.115 | 0.319 | 0.120 | 0.325 | 0.140* | 0.347 |
| Neutral | 0.688 | 0.464 | 0.666 | 0.472 | 0.659 | 0.474 |
| Lover | 0.197 | 0.398 | 0.214 | 0.411 | 0.201 | 0.401 |
| Time preferences: | | | | | | |
| Low | 0.109 | 0.311 | 0.138* | 0.346 | 0.130 | 0.337 |
| Medium | 0.540 | 0.499 | 0.498* | 0.500 | 0.550 | 0.498 |
| High | 0.351 | 0.478 | 0.363 | 0.481 | 0.320 | 0.467 |
| Religious intensity: | | | | | | |
| Low | 0.552 | 0.497 | 0.603** | 0.490 | 0.525 | 0.500 |
| Medium | 0.382 | 0.486 | 0.345 | 0.476 | 0.434** | 0.496 |
| High | 0.066 | 0.248 | 0.052 | 0.222 | 0.041** | 0.198 |
| Smoker | 0.392 | 0.488 | 0.482*** | 0.500 | 0.463*** | 0.499 |
| Sport | 0.299 | 0.458 | 0.249** | 0.433 | 0.286 | 0.452 |
| Internet | 0.076 | 0.266 | 0.098 | 0.297 | 0.078 | 0.268 |
| Grade retention | 0.100 | 0.300 | 0.345*** | 0.476 | 0.229*** | 0.421 |
| Previous year mark | 7.050 | 0.808 | 6.390*** | 0.726 | 6.610*** | 0.760 |
| Math mark | 6.800 | 1.270 | 6.170*** | 1.310 | 6.380*** | 1.250 |
| Study hours | 2.770 | 1.500 | 1.840*** | 1.400 | 2.120*** | 1.390 |
| Lyceum | 0.589 | 0.492 | 0.024*** | 0.153 | 0.130*** | 0.337 |
| Student loan information | 0.376 | 0.484 | 0.306*** | 0.461 | 0.356 | 0.479 |

Notes: * indicates difference with “yes” alternative that are statistically significant at 10%, ** at 5%, and *** at 1%.

University Choice Results: Marginal Effects and MNL Coefficients

Table 3: University Choice Model: Marginal Effects

| Do you intend to enrol in university? | | Yes | | No | | I don't know | |
|---------------------------------------|---------------|-----------|-------|-----------|-------|--------------|-------|
| | | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Family background | | | | | | | |
| Family size | | -0.024 | 0.017 | 0.002* | 0.001 | 0.022 | 0.016 |
| Single parent | | -0.017 | 0.051 | -0.005 | 0.004 | 0.022 | 0.050 |
| Jointly decision making rule | | -0.014 | 0.025 | 0.001 | 0.002 | 0.013 | 0.025 |
| Father's education: | Middle school | 0.149*** | 0.055 | -0.007* | 0.004 | -0.142*** | 0.055 |
| | High school | 0.182*** | 0.054 | -0.015*** | 0.005 | -0.167*** | 0.053 |
| | University | 0.259*** | 0.063 | -0.012** | 0.006 | -0.247*** | 0.062 |
| Mother's education: | Middle school | 0.030 | 0.061 | 0.003 | 0.004 | -0.034 | 0.060 |
| | High school | 0.076 | 0.058 | -0.001 | 0.005 | -0.076 | 0.057 |
| | University | 0.141** | 0.072 | -0.007 | 0.006 | -0.134* | 0.071 |
| Working father | | 0.042 | 0.045 | 0.001 | 0.003 | -0.044 | 0.044 |
| Self-employed father | | 0.008 | 0.024 | -0.003 | 0.002 | -0.005 | 0.024 |
| Working mother | | 0.048 | 0.031 | -0.003 | 0.002 | -0.044 | 0.031 |
| Income quintile | 1st | 0.047 | 0.033 | -0.002 | 0.003 | -0.045 | 0.033 |
| | 3rd | 0.026 | 0.036 | -0.004 | 0.003 | -0.022 | 0.036 |
| | 4th | 0.049 | 0.043 | -0.000 | 0.003 | -0.049 | 0.043 |
| | 5th | 0.087** | 0.042 | -0.007 | 0.004 | -0.080** | 0.040 |
| Homeownership | | 0.084** | 0.042 | -0.004 | 0.003 | -0.080** | 0.040 |
| Urban | | 0.058** | 0.029 | -0.001 | 0.002 | -0.057** | 0.028 |
| Residential | | 0.029 | 0.030 | -0.000 | 0.002 | -0.029 | 0.029 |
| Student characteristics | | | | | | | |
| Female | | 0.068** | 0.034 | -0.010*** | 0.003 | -0.058* | 0.033 |
| No interaction | | 0.109*** | 0.023 | 0.002 | 0.002 | -0.111*** | 0.023 |
| Parental influence | | 0.020 | 0.029 | -0.007** | 0.003 | -0.013 | 0.028 |
| Low job aspiration | | -0.186*** | 0.039 | 0.014*** | 0.004 | 0.172*** | 0.038 |
| Reservation wage (log) | | 0.030 | 0.033 | -0.111*** | 0.020 | 0.080** | 0.032 |
| Find a job | | 0.105*** | 0.027 | -0.012*** | 0.003 | -0.094*** | 0.026 |
| Find the desired job | | 0.175*** | 0.033 | -0.023*** | 0.005 | -0.153*** | 0.033 |
| Find a well-paid job | | 0.006 | 0.035 | -0.001 | 0.002 | -0.005 | 0.034 |
| Labour market opportunities: | Scale down | -0.143** | 0.059 | 0.008 | 0.005 | 0.135** | 0.058 |
| | Try hard | 0.088* | 0.049 | 0.000 | 0.005 | -0.087* | 0.048 |
| | Confident | 0.117** | 0.053 | 0.012** | 0.005 | -0.128** | 0.052 |
| Risk preferences: | Averse | -0.072* | 0.041 | 0.000 | 0.003 | 0.071* | 0.040 |
| | Lover | -0.043 | 0.030 | 0.002 | 0.003 | 0.041 | 0.030 |
| Time preferences: | Low | -0.027 | 0.037 | 0.006* | 0.003 | 0.022 | 0.036 |
| | High | 0.030 | 0.027 | 0.001 | 0.002 | -0.031 | 0.027 |
| Religious intensity: | Medium | -0.061** | 0.030 | -0.003 | 0.003 | 0.064** | 0.030 |
| | High | 0.046 | 0.065 | -0.004 | 0.005 | -0.041 | 0.064 |

(continued)

Table 3: University Choice Model: Marginal Effects (continued)

| Do you intend to enrol in university? | Yes | | No | | I don't know | |
|---------------------------------------|----------|-------|-----------|-------|--------------|-------|
| | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Student characteristics | | | | | | |
| Smoker | -0.003 | 0.023 | -0.001 | 0.002 | 0.005 | 0.023 |
| Sport | 0.004 | 0.028 | -0.005** | 0.002 | 0.002 | 0.028 |
| Internet | 0.040 | 0.057 | -0.003 | 0.003 | -0.037 | 0.056 |
| Grade retention | -0.087** | 0.036 | 0.009*** | 0.003 | 0.078** | 0.035 |
| Previous year mark | 0.110*** | 0.019 | -0.009*** | 0.003 | -0.101*** | 0.019 |
| Math mark | 0.028*** | 0.010 | -0.001 | 0.001 | -0.027*** | 0.010 |
| Study hours | 0.033*** | 0.011 | -0.001 | 0.001 | -0.032*** | 0.011 |
| Lyceum | 0.403*** | 0.038 | -0.036*** | 0.008 | -0.367*** | 0.036 |
| Student loan information | 0.022 | 0.026 | -0.002 | 0.002 | -0.021 | 0.025 |

Notes: The estimation includes six dummies for provincial residence. * significant at 10% level; ** significant at 5% level; *** significant at 1% level. No. of observations 2,703.

Table 4: University Choice Model: MNL Estimates

| Do you intend to enrol in university? | | Yes | | No | |
|---------------------------------------|---------------|-----------|-------|-----------|-------|
| | | Coeff. | S.E. | Coeff. | S.E. |
| Family background | | | | | |
| Family size | | -0.105 | 0.076 | 0.089 | 0.088 |
| Single parent | | -0.093 | 0.235 | -0.420 | 0.283 |
| Jointly decision making rule | | -0.061 | 0.116 | -0.001 | 0.166 |
| Father's education: | Middle school | 0.667*** | 0.255 | -0.052 | 0.284 |
| | High school | 0.797*** | 0.244 | -0.601** | 0.278 |
| | University | 1.161*** | 0.293 | -0.149 | 0.492 |
| Mother's education: | Middle school | 0.150 | 0.280 | 0.365 | 0.344 |
| | High school | 0.351 | 0.264 | 0.195 | 0.354 |
| | University | 0.630* | 0.329 | -0.117 | 0.432 |
| Working father | | 0.200 | 0.203 | 0.220 | 0.248 |
| Self-employed father | | 0.028 | 0.110 | -0.174 | 0.181 |
| Working mother | | 0.210 | 0.142 | -0.117 | 0.181 |
| Income quintile | 1st | 0.211 | 0.152 | 0.024 | 0.229 |
| | 3rd | 0.109 | 0.166 | -0.213 | 0.216 |
| | 4th | 0.227 | 0.197 | 0.123 | 0.271 |
| | 5th | 0.382** | 0.187 | -0.250 | 0.311 |
| Homeownership | | 0.376** | 0.189 | -0.013 | 0.199 |
| Urban | | 0.265** | 0.131 | 0.140 | 0.163 |
| Residential | | 0.134 | 0.135 | 0.074 | 0.172 |
| Student characteristics | | | | | |
| Female | | 0.282* | 0.157 | -0.574** | 0.230 |
| No interaction | | 0.511*** | 0.106 | 0.526*** | 0.150 |
| Parental influence | | 0.072 | 0.132 | -0.457*** | 0.155 |
| Low job aspiration | | -0.818*** | 0.174 | 0.492** | 0.201 |
| Reservation wage (log) | | -0.206 | 0.141 | -8.517*** | 0.702 |
| Find a job | | 0.450*** | 0.122 | -0.573*** | 0.161 |
| Find the desired job | | 0.740*** | 0.151 | -1.201*** | 0.168 |
| Find a well-paid job | | 0.026 | 0.158 | -0.055 | 0.177 |
| Labour market opportunities: | Scale down | -0.639** | 0.267 | 0.172 | 0.350 |
| | Try hard | 0.405* | 0.222 | 0.244 | 0.331 |
| | Confident | 0.576** | 0.243 | 1.260*** | 0.348 |
| Risk preferences: | Averse | -0.330* | 0.186 | -0.190 | 0.239 |
| | Lover | -0.193 | 0.138 | 0.056 | 0.195 |
| Time preferences: | Low | -0.109 | 0.169 | 0.350* | 0.212 |
| | High | 0.141 | 0.126 | 0.177 | 0.167 |
| Religious intensity: | Medium | -0.290** | 0.139 | -0.413** | 0.183 |
| | High | 0.198 | 0.296 | -0.182 | 0.402 |

(continued)

Table 4: University Choice Model: MNL Estimates (continued)

| Do you intend to enrol in university? | Yes | | No | |
|---------------------------------------|----------|-------|-----------|-------|
| | Coeff. | S.E. | Coeff. | S.E. |
| Student characteristics | | | | |
| Smoker | -0.019 | 0.106 | -0.123 | 0.155 |
| Sport | 0.000 | 0.129 | -0.385** | 0.160 |
| Internet | 0.175 | 0.261 | -0.142 | 0.270 |
| Grade retention | -0.375** | 0.162 | 0.448*** | 0.173 |
| Previous year mark | 0.482*** | 0.086 | -0.374** | 0.164 |
| Math mark | 0.125*** | 0.047 | -0.029 | 0.074 |
| Study hours | 0.151*** | 0.049 | 0.037 | 0.081 |
| Lyceum | 1.753*** | 0.163 | -1.558*** | 0.341 |
| Student loan information | 0.098 | 0.117 | -0.057 | 0.164 |

Notes: “I don’t know” is the baseline outcome. The estimation includes a constant and six dummies for provincial residence. S.E. is for cluster-robust standard errors at the school level. Pseudo- R^2 is 0.4316. * significant at 10% level; ** significant at 5% level; *** significant at 1% level. No. of observations 2,703.

Counterfactual Analyses

Would Playing Sport Increase the University Enrolment Rate?

Figure 1: University Choice of Non-Sporty Students: Actual versus Counterfactual Distribution

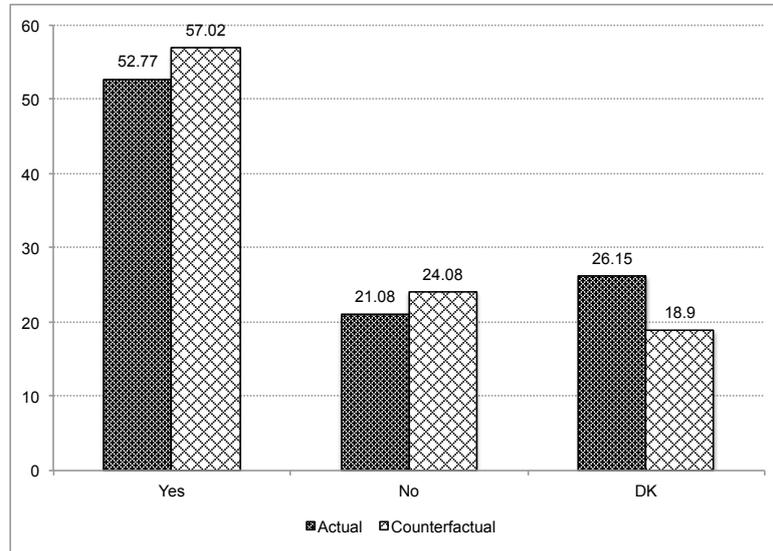
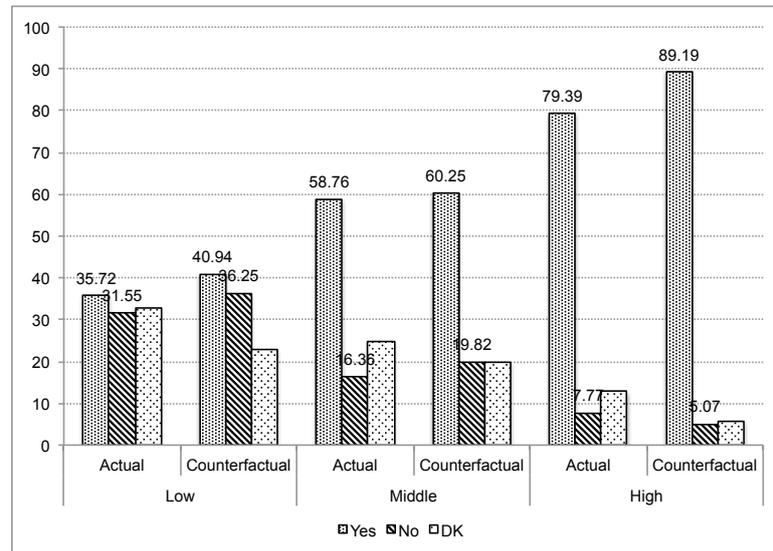
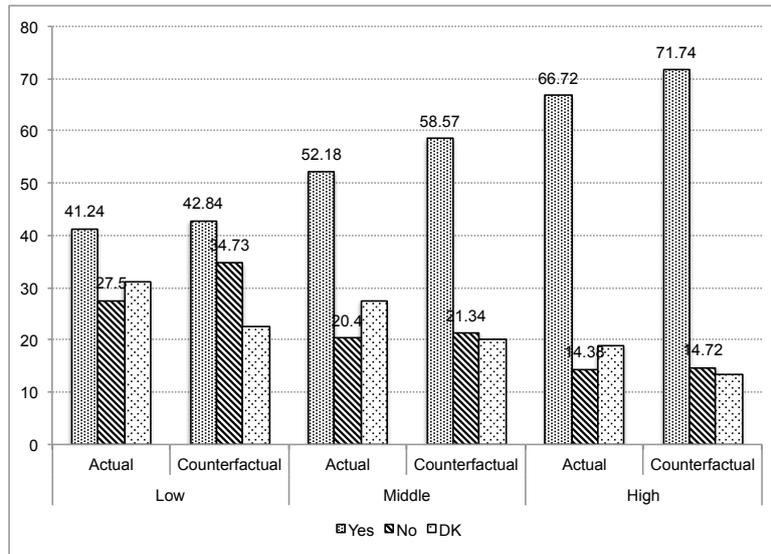


Figure 2: Actual and Counterfactual University Choice of Non-Sporty Students by Father Education



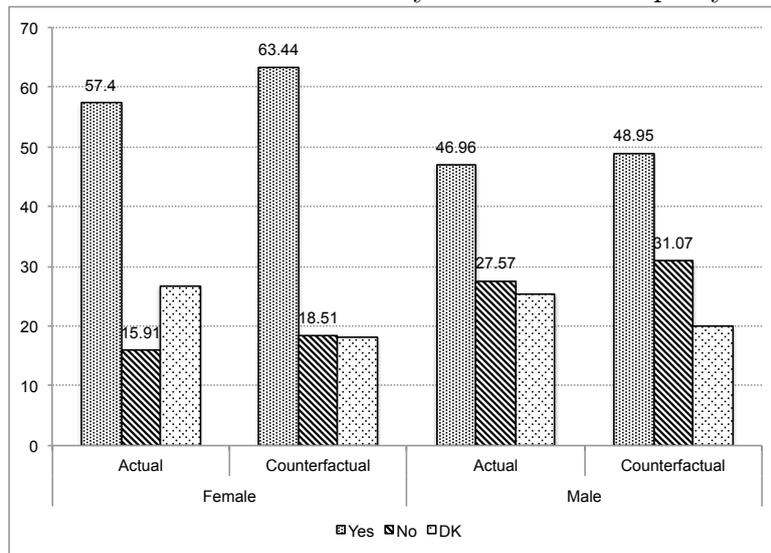
Notes: Low = elementary and middle school; middle = high school; high = university and more. For reasons of clarity, we do not show percentages for DK alternative bars.

Figure 3: Actual and Counterfactual University Choice of Non-Sporty Students by Family Income



Notes: Low = 1st tertile; middle = 2nd tertile; high = 3rd tertile. For reasons of clarity, we do not show percentages for DK alternative bars.

Figure 4: Actual and Counterfactual University Choice of Non-Sporty Students by Gender



Notes: For reasons of clarity, we do not show percentages for DK alternative bars.

Handling Undecided Responses as Missing Values

Table 5: Means of Auxiliary Variables by University Choices

| Variable | Definition | Yes | No | DK |
|-------------------------|---|---------------|-------------|-------------|
| No. of observations (%) | | 1,454 (53.79) | 542 (20.05) | 707 (26.16) |
| Uncertain grade | =1 if the child is uncertain about final school grade | 0.354** | 0.231*** | 0.397 |
| Work | =1 if the child works | 0.129** | 0.196 | 0.163 |
| School grade | =1 if the child attends a vocational school and has an avg. grade < 6 | 0.079*** | 0.596*** | 0.378 |
| Stud. loan good | =1 if the child thinks of student loans as a good investment | 0.606*** | 0.386*** | 0.540 |
| Stud. loan duty | =1 if the child thinks of student loans as financial burden | 0.273*** | 0.467*** | 0.355 |

Notes: * indicates differences with “DK” alternative that are statistically significant at 10%, ** at 5%, and *** at 1%.

Table 6: University Choice Model Handling DK as Missing Responses

| Dependent variable = 1 if the student intends to enrol in university | | Coefficient | S.E. |
|--|---------------|-------------|-------|
| Family background | | | |
| Family size | | -0.003 | 0.008 |
| Single parent | | 0.034 | 0.025 |
| Jointly decision making rule | | -0.017 | 0.014 |
| Father's education: | Middle school | 0.061* | 0.036 |
| | High school | 0.119*** | 0.036 |
| | University | 0.092** | 0.039 |
| Mother's education: | Middle school | 0.018 | 0.037 |
| | High school | 0.057 | 0.037 |
| | University | 0.090** | 0.040 |
| Working father | | 0.022 | 0.025 |
| Self-employed father | | 0.034*** | 0.013 |
| Working mother | | 0.016 | 0.017 |
| Income quintile | 1st | 0.019 | 0.025 |
| | 3rd | 0.024 | 0.021 |
| | 4th | 0.048** | 0.023 |
| | 5th | 0.063*** | 0.023 |
| Homeownership | | 0.021 | 0.023 |
| Urban | | 0.005 | 0.015 |
| Residential | | 0.000 | 0.018 |
| Student characteristics | | | |
| Female | | 0.058*** | 0.016 |
| No interaction | | -0.014 | 0.014 |
| Parental influence | | 0.044*** | 0.016 |
| Low job aspiration | | -0.197*** | 0.026 |
| Reservation wage (log) | | 0.315*** | 0.032 |
| Find a job | | 0.074*** | 0.018 |
| Find the desired job | | 0.175*** | 0.020 |
| Find a well-paid job | | 0.014 | 0.016 |
| Labour market opportunities: | Scale down | -0.064* | 0.037 |
| | Try hard | 0.014 | 0.025 |
| | Confident | -0.093*** | 0.026 |
| Risk preferences: | Averse | -0.016 | 0.021 |
| | Lover | -0.020 | 0.016 |
| Time preferences: | Low | -0.019 | 0.022 |
| | High | -0.012 | 0.015 |
| Religious intensity: | Medium | 0.016 | 0.016 |
| | High | -0.002 | 0.027 |

(continued)

Table 7: University Choice Handling DK as Missing Responses (continued)

| Dependent variable = 1 if the student intends to enrol in university | | |
|--|-------------|-------|
| | Coefficient | S.E. |
| Student characteristics | | |
| Smoker | -0.001 | 0.014 |
| Sport | 0.022 | 0.014 |
| Internet | 0.021 | 0.025 |
| Grade retention | -0.093*** | 0.021 |
| Previous year mark | 0.050*** | 0.011 |
| Math mark | 0.017*** | 0.007 |
| Study hours | 0.011** | 0.005 |
| Lyceum | 0.147*** | 0.018 |
| Student loan information | 0.026** | 0.013 |

Notes: The estimation includes six dummies for provincial residence. S.E. is for cluster-robust standard errors at the school level. * significant at 10% level; ** significant at 5% level; *** significant at 1% level. No. of observations 2,703.

Online Appendix

A Economic Preference Elicitation

Risk Preference Elicitation

The experimental procedure adopted to measure risk aversion is the Holt and Laury (2002) design based on a multiple price list (MPL). Moving from the laboratory environment to the field, the experiment (Levitt and List 2007, 2009, List 2009) has to be proposed on a hypothetical basis. Kahneman and Tversky (1979:265) maintain that people often know how they would behave in an actual situation of choice. The Holt and Laury (2002) experiment qualifies this statement by clarifying that it does not hold under high-incentive conditions. On the other hand, as is reasonable to expect, behavior is not affected when hypothetical payoffs are scaled up. The authors also report that even with low stakes with prizes less than \$4, about two-thirds of the subjects are risk averse suggesting that it would be improper to analyze behavior under the simplifying assumption of risk neutrality.

The MPL was administered through a web-based field experiment (Menon and Perali 2009). To reduce the potential bias associated with a hypothetical set-up, while maintaining incentive compatibility, we chose the low payoffs scheme generally adopted in the literature (Andersen *et al.* 2008, Harrison, List and Towe 2007, Holt and Laury 2002). With this aim in mind, at the beginning of the questionnaire, the respondents were warmed-up with a section that both explained the lottery with a simulation of the experimental procedure and intended to recreate the contingent situation of a real experiment. For this reason, the subject was requested to play the lottery launching the dice as if subjects were getting a real prize. Additionally, we stimulated the subjects to reveal their true preferences, explaining the scope of the research in a warm-up section of the questionnaire.

Time Preference Elicitation

Like the elicitation of risk preferences, the choice task for time preferences is implemented through a MPL with a format of the type introduced in Coller and Williams (1999) and Harrison, Lau, and Williams (2002). Because of the field context and considering that the elicitation of risk and time preferences was ancillary to the investigation of education choices and the take-up of a loan, we treated our subject pool with only a single level of hypothetical award selected at the level of 800 euros corresponding to the amount of the monthly starting salary for a student preferring work to study, and a single time horizon (Menon and Perali 2009).

B Sensitivity Analysis

Type and Major University Choice: Nested Logit Model

Table B.1: Which Type of University Will You Choose? - Nested Logit Model

| Do you intend to enrol in university? | | Yes | | | | | | No | |
|---|---------------|---------------|-------|------------------|-------|-------------|-------|-------------|-------|
| Which type of university will you choose? | | Close to home | | Ideal university | | Other | | | |
| No. of observations (%) | | 344 (12.73) | | 729 (26.97) | | 381 (14.09) | | 542 (20.05) | |
| | | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| Family background | | | | | | | | | |
| Family size | | -1.380** | 0.576 | 0.308 | 0.321 | 0.204 | 0.484 | 0.105 | 0.078 |
| Single parent | | 2.445 | 1.826 | -2.233 | 1.465 | 0.988 | 2.022 | -0.444 | 0.277 |
| Jointly decision making rule | | -1.870 | 1.395 | 1.468* | 0.766 | -1.161 | 1.120 | 0.027 | 0.165 |
| Father's education: | Middle school | 2.099 | 2.392 | -1.248 | 1.487 | 2.590 | 2.096 | -0.082 | 0.278 |
| | High school | -1.227 | 2.507 | 1.931 | 1.528 | 0.977 | 2.118 | -0.619** | 0.307 |
| | University | 0.537 | 2.861 | 2.435 | 1.675 | -0.179 | 2.538 | -0.144 | 0.440 |
| Mother's education: | Middle school | -1.041 | 2.775 | 5.633*** | 2.282 | -6.290*** | 2.340 | 0.296 | 0.290 |
| | High school | -0.504 | 2.788 | 5.291** | 2.277 | -5.397** | 2.326 | 0.129 | 0.321 |
| | University | -2.534 | 3.694 | 7.500*** | 2.680 | -5.775* | 3.069 | -0.166 | 0.463 |
| Working father | | 4.113* | 2.485 | 1.388 | 1.583 | -4.187** | 2.007 | 0.196 | 0.256 |
| Self-employed father | | -2.485* | 1.358 | 1.003 | 0.774 | 0.701 | 1.356 | -0.155 | 0.179 |
| Working mother | | -1.662 | 1.189 | 0.909 | 0.718 | 0.778 | 1.127 | -0.085 | 0.172 |
| Income quintile | 1st | 0.791 | 1.688 | -1.126 | 1.117 | 1.723 | 1.610 | 0.006 | 0.224 |
| | 3rd | -0.682 | 1.695 | -0.643 | 1.037 | 1.546 | 1.698 | -0.189 | 0.235 |
| | 4th | 0.751 | 1.747 | -2.899** | 1.359 | 4.208* | 2.320 | 0.111 | 0.248 |
| | 5th | -2.354 | 2.896 | 1.342 | 1.335 | 0.496 | 2.484 | -0.181 | 0.305 |
| Homeownership | | 2.252 | 1.608 | -0.514 | 0.966 | 0.520 | 1.497 | -0.042 | 0.221 |
| Urban | | -0.460 | 1.432 | -1.608* | 0.870 | 3.985*** | 1.578 | 0.198 | 0.190 |
| Residential | | -1.581 | 1.242 | 2.177*** | 0.753 | -1.311 | 1.139 | 0.080 | 0.163 |
| Student characteristics | | | | | | | | | |
| Female | | 2.125 | 1.357 | -1.551* | 0.842 | 1.679 | 1.400 | -0.614*** | 0.190 |
| No interaction | | 0.863 | 1.139 | 0.979 | 0.685 | -0.453 | 1.066 | 0.506*** | 0.159 |
| Parental influence | | 2.148 | 1.348 | -0.627 | 0.724 | -0.522 | 1.145 | -0.486*** | 0.164 |
| Low job aspiration | | -0.104 | 1.711 | -0.854 | 1.057 | -1.616 | 1.722 | 0.468** | 0.194 |
| Reservation wage (log) | | 5.804** | 2.424 | -2.593** | 1.095 | -2.168 | 1.979 | -8.766*** | 0.720 |
| Find a job | | 4.019* | 1.569 | 0.897 | 0.876 | -3.546** | 1.830 | -0.616*** | 0.194 |
| Find the desired job | | -3.640** | 1.731 | 2.324* | 0.876 | 2.183 | 1.443 | -1.187*** | 0.180 |
| Find a well-paid job | | 0.747 | 1.431 | 1.184 | 0.816 | -2.108 | 1.332 | -0.023 | 0.176 |
| Labour market opportunities: | Scale down | -1.739 | 2.559 | -0.669 | 2.008 | 0.048 | 2.524 | 0.194 | 0.346 |
| | Try hard | -2.555 | 2.039 | 3.326** | 1.670 | -0.996 | 2.147 | 0.268 | 0.310 |
| | Confident | 0.711 | 2.396 | 4.373** | 1.857 | -5.408* | 3.200 | 1.257*** | 0.325 |
| Risk preferences: | Averse | -2.260 | 2.115 | -0.655 | 1.060 | 1.746 | 1.779 | -0.187 | 0.241 |
| | Lover | -6.381*** | 2.260 | 0.692 | 0.890 | 3.228** | 1.582 | 0.149 | 0.200 |
| Time preferences: | Low | 0.907 | 2.084 | -0.614 | 1.135 | -0.053 | 1.741 | 0.350 | 0.242 |
| | High | -0.664 | 1.622 | 0.334 | 0.760 | 0.508 | 1.410 | 0.160 | 0.174 |
| Religious intensity: | Medium | 2.927** | 1.291 | -1.026 | 0.783 | -1.995* | 1.182 | -0.408** | 0.173 |
| | High | 2.189 | 2.571 | 2.267 | 1.476 | -5.460 | 3.378 | -0.132 | 0.383 |

(continued)

Table B.1: Which Type of University Will You Choose? - Nested Logit Model (continued)

| Do you intend to enrol in university? | Yes | | | | | | No | |
|---|---------------|----------|------------------|-------|-------------|-------|-------------|-------|
| Which type of university will you choose? | Close to home | | Ideal university | | Other | | | |
| No. of observations (%) | 344 (12.73) | | 729 (26.97) | | 381 (14.09) | | 542 (20.05) | |
| | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| Student characteristics | | | | | | | | |
| Smoker | 0.570 | 1.220 | -1.287* | 0.770 | 1.312 | 1.104 | -0.140 | 0.164 |
| Sport | 2.017 | 1.399 | -1.593* | 0.826 | 0.741 | 1.403 | -0.412** | 0.188 |
| Internet | 7.011 | 2.115*** | -3.635** | 1.336 | -1.136 | 1.993 | -0.166 | 0.283 |
| Grade retention | -2.333 | 1.649 | -1.068 | 1.005 | 2.085 | 1.524 | 0.461** | 0.189 |
| Previous year mark | -0.082 | 0.660 | 1.595*** | 0.439 | -0.583 | 0.637 | -0.398*** | 0.132 |
| Math mark | -0.494 | 0.469 | 0.865*** | 0.296 | -0.458 | 0.412 | -0.020 | 0.072 |
| Study hours | -1.174 | 0.552** | 0.973*** | 0.299 | -0.045 | 0.367 | 0.065 | 0.068 |
| Lyceum | 2.980 | 1.454** | 1.386 | 0.915 | 2.085 | 1.323 | -1.594*** | 0.364 |
| Student loan information | 0.453 | 1.305 | 1.445** | 0.752 | -2.193 | 1.393 | -0.005 | 0.168 |

Notes: “I don’t know” is the baseline outcome. The estimation includes a constant and six dummies for provincial residence. S.E. is for cluster-robust standard errors at the school level. Log-likelihood -2905.080. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table B.2: University Major Choice: Nested Logit Model

| Do you intend to enrol in university? | | Yes | | | | No | |
|---------------------------------------|---------------|-------------|-------|----------------|-------|-------------|-------|
| Which major will you choose? | | Scientific | | Non-Scientific | | | |
| No. of observations (%) | | 565 (20.90) | | 889 (32.89) | | 542 (20.05) | |
| | | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| Family background | | | | | | | |
| Family size | | -0.088 | 0.071 | -0.118* | 0.064 | 0.089 | 0.076 |
| Single parent | | 0.034 | 0.261 | -0.171 | 0.227 | -0.420 | 0.275 |
| Jointly decision making rule | | -0.076 | 0.140 | -0.053 | 0.124 | -0.001 | 0.162 |
| Father's education: | Middle school | 0.572* | 0.317 | 0.695*** | 0.258 | -0.053 | 0.273 |
| | High school | 0.668** | 0.344 | 0.840*** | 0.271 | -0.603** | 0.302 |
| | University | 1.237*** | 0.375 | 1.097*** | 0.330 | -0.156 | 0.432 |
| Mother's education: | Middle school | 0.080 | 0.292 | 0.183 | 0.256 | 0.369 | 0.286 |
| | High school | 0.151 | 0.345 | 0.435 | 0.275 | 0.200 | 0.317 |
| | University | 0.390 | 0.425 | 0.739** | 0.336 | -0.106 | 0.454 |
| Working father | | 0.268 | 0.254 | 0.171 | 0.214 | 0.222 | 0.249 |
| Self-employed father | | -0.110 | 0.205 | 0.091 | 0.146 | -0.171 | 0.176 |
| Working mother | | 0.195 | 0.151 | 0.225* | 0.134 | -0.115 | 0.168 |
| Income quintile | 1st | 0.369 | 0.269 | 0.152 | 0.193 | 0.023 | 0.222 |
| | 3rd | 0.290 | 0.280 | 0.042 | 0.196 | -0.216 | 0.231 |
| | 4th | 0.373 | 0.253 | 0.175 | 0.196 | 0.121 | 0.245 |
| | 5th | 0.403* | 0.230 | 0.385* | 0.206 | -0.249 | 0.296 |
| Homeownership | | 0.409** | 0.200 | 0.363** | 0.176 | -0.011 | 0.216 |
| Urban | | 0.154 | 0.196 | 0.312** | 0.144 | 0.145 | 0.185 |
| Residential | | -0.001 | 0.191 | 0.196 | 0.140 | 0.074 | 0.159 |
| Student characteristics | | | | | | | |
| Female | | -0.086 | 0.419 | 0.444** | 0.221 | -0.566*** | 0.186 |
| No interaction | | 0.540*** | 0.138 | 0.505*** | 0.122 | 0.526*** | 0.157 |
| Parental influence | | 0.093 | 0.143 | 0.072 | 0.128 | -0.456*** | 0.161 |
| Low job aspiration | | -0.545 | 0.376 | -0.942*** | 0.241 | 0.489*** | 0.193 |
| Reservation wage (log) | | -0.029 | 0.251 | -0.297* | 0.177 | -8.521*** | 0.698 |
| Find a job | | 0.419*** | 0.151 | 0.465*** | 0.132 | -0.574*** | 0.189 |
| Find the desired job | | 0.884*** | 0.224 | 0.679*** | 0.148 | -1.204*** | 0.175 |
| Find a well-paid job | | 0.089 | 0.161 | -0.002 | 0.135 | -0.055 | 0.174 |
| Labour market opportunities: | Scale down | -0.556* | 0.330 | -0.653*** | 0.261 | 0.166 | 0.345 |
| | Try hard | 0.691* | 0.407 | 0.310 | 0.238 | 0.239 | 0.309 |
| | Confident | 1.066* | 0.616 | 0.375 | 0.323 | 1.246*** | 0.323 |
| Risk preferences: | Averse | -0.337 | 0.208 | -0.322* | 0.185 | -0.187 | 0.237 |
| | Lover | -0.149 | 0.167 | -0.199 | 0.149 | 0.058 | 0.194 |
| Time preferences: | Low | -0.010 | 0.242 | -0.156 | 0.199 | 0.347 | 0.239 |
| | High | 0.180 | 0.146 | 0.121 | 0.131 | 0.176 | 0.170 |
| Religious intensity: | Medium | -0.200 | 0.173 | -0.319** | 0.132 | -0.413** | 0.170 |
| | High | 0.182 | 0.311 | 0.193 | 0.286 | -0.183 | 0.375 |

(continued)

Table B.2: University Major Model: Nested Logit Model (continued)

| Do you intend to enrol in university? | Yes | | | | No | |
|---------------------------------------|-------------|-------|----------------|-------|-------------|-------|
| Which major will you choose? | Scientific | | Non-Scientific | | | |
| | 565 (20.90) | | 889 (32.89) | | 542 (20.05) | |
| | Coeff. | S.E. | Coeff. | S.E. | Coeff. | S.E. |
| Student characteristics | | | | | | |
| Smoker | -0.118 | 0.172 | 0.013 | 0.129 | -0.124 | 0.161 |
| Sport | -0.004 | 0.151 | 0.003 | 0.138 | -0.385** | 0.185 |
| Internet | 0.255 | 0.263 | 0.122 | 0.236 | -0.145 | 0.280 |
| Grade retention | -0.567* | 0.295 | -0.305* | 0.184 | 0.448** | 0.186 |
| Previous year mark | 0.508*** | 0.104 | 0.470*** | 0.093 | -0.376*** | 0.129 |
| Math mark | 0.231* | 0.132 | 0.071 | 0.079 | -0.032 | 0.071 |
| Study hours | 0.137** | 0.056 | 0.160*** | 0.050 | 0.038 | 0.066 |
| Lyceum | 2.266*** | 0.592 | 1.482*** | 0.328 | -1.557*** | 0.358 |
| Student loan information | 0.080 | 0.136 | 0.111 | 0.123 | -0.055 | 0.165 |

Notes: “I don’t know” is the baseline outcome. The estimation includes a constant and six dummies for provincial residence. S.E. is for cluster-robust standard errors at the school level. Log-likelihood -2387.470. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Gender and University Enrolment

Table B.3: University Choice of Girls: Marginal Effects

| Do you intend to enrol in university? | | Yes | | No | | I don't know | |
|---------------------------------------|---------------|-------------|-------|-------------|-------|--------------|-------|
| No. of observations (%) | | 795 (59.33) | | 203 (15.15) | | 342 (25.52) | |
| | | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Family background | | | | | | | |
| Family size | | -0.015 | 0.011 | 0.007 | 0.008 | 0.008 | 0.013 |
| Single parent | | 0.040 | 0.038 | -0.049* | 0.026 | 0.009 | 0.037 |
| Jointly decision making rule | | 0.012 | 0.017 | -0.004 | 0.016 | -0.008 | 0.020 |
| Father's education: | Middle school | 0.056 | 0.047 | -0.001 | 0.023 | -0.055 | 0.049 |
| | High school | 0.092** | 0.046 | -0.063** | 0.029 | -0.029 | 0.047 |
| | University | 0.070 | 0.060 | 0.024 | 0.036 | -0.094 | 0.062 |
| Mother's education: | Middle school | 0.016 | 0.044 | 0.013 | 0.025 | -0.028 | 0.047 |
| | High school | 0.047 | 0.048 | -0.022 | 0.026 | -0.025 | 0.043 |
| | University | 0.178*** | 0.059 | -0.053 | 0.065 | -0.125* | 0.066 |
| Working father | | 0.033 | 0.037 | -0.023 | 0.020 | -0.010 | 0.036 |
| Self-employed father | | 0.026 | 0.018 | 0.002 | 0.017 | -0.028 | 0.019 |
| Working mother | | 0.043* | 0.022 | -0.011 | 0.019 | -0.031 | 0.026 |
| Income quintile | 1st | -0.007 | 0.024 | 0.017 | 0.019 | -0.010 | 0.027 |
| | 3rd | 0.027 | 0.028 | -0.006 | 0.021 | -0.021 | 0.030 |
| | 4th | 0.049* | 0.029 | 0.039* | 0.021 | -0.088** | 0.036 |
| | 5th | 0.050 | 0.035 | -0.035 | 0.026 | -0.016 | 0.032 |
| Homeownership | | 0.050 | 0.034 | -0.022 | 0.023 | -0.027 | 0.035 |
| Urban | | 0.047* | 0.025 | -0.014 | 0.015 | -0.032 | 0.025 |
| Residential | | -0.007 | 0.026 | -0.021 | 0.021 | 0.028 | 0.024 |
| Student characteristics | | | | | | | |
| No interaction | | 0.050*** | 0.018 | 0.037*** | 0.014 | -0.087*** | 0.017 |
| Parental influence | | 0.013 | 0.021 | -0.031** | 0.016 | 0.018 | 0.020 |
| Low job aspiration | | -0.165*** | 0.025 | 0.077*** | 0.017 | 0.088*** | 0.027 |
| Reservation wage (log) | | 0.165*** | 0.038 | -0.465*** | 0.072 | 0.300*** | 0.049 |
| Find a job | | 0.072*** | 0.022 | -0.041** | 0.016 | -0.031 | 0.025 |
| Find the desired job | | 0.124*** | 0.032 | -0.103*** | 0.017 | -0.021 | 0.033 |
| Find a well-paid job | | 0.002 | 0.026 | -0.009 | 0.015 | 0.007 | 0.025 |
| Labour market opportunities: | Scale down | -0.040 | 0.047 | -0.006 | 0.035 | 0.047 | 0.043 |
| | Try hard | 0.049 | 0.040 | -0.005 | 0.032 | -0.045 | 0.036 |
| | Confident | 0.031 | 0.041 | 0.057* | 0.034 | -0.088** | 0.039 |
| Risk preferences: | Averse | -0.043 | 0.031 | -0.025 | 0.024 | 0.0678* | 0.036 |
| | Lover | 0.001 | 0.025 | -0.010 | 0.018 | 0.009 | 0.025 |
| Time preferences: | Low | -0.020 | 0.032 | 0.014 | 0.018 | 0.006 | 0.032 |
| | High | 0.040* | 0.022 | -0.022 | 0.017 | -0.019 | 0.028 |
| Religious intensity: | Medium | -0.011 | 0.021 | -0.021 | 0.019 | 0.032 | 0.023 |
| | High | 0.058 | 0.049 | -0.043 | 0.040 | -0.015 | 0.058 |

(continued)

Table B.3: University Choice of Girls: Marginal Effects (continued)

| Do you intend to enrol in university? | Yes | | No | | I don't know | |
|---------------------------------------|-------------|-------|-------------|-------|--------------|-------|
| No. of observations (%) | 795 (59.33) | | 203 (15.15) | | 342 (25.52) | |
| | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Student characteristics | | | | | | |
| Smoker | -0.035* | 0.018 | 0.001 | 0.014 | 0.034* | 0.019 |
| Sport | 0.045* | 0.025 | -0.020 | 0.015 | -0.026 | 0.030 |
| Internet | 0.139** | 0.061 | -0.043 | 0.035 | -0.096 | 0.063 |
| Grade retention | -0.051* | 0.028 | 0.058*** | 0.018 | -0.007 | 0.034 |
| Previous year mark | 0.091*** | 0.015 | -0.016 | 0.016 | -0.075*** | 0.014 |
| Math mark | 0.000 | 0.009 | -0.005 | 0.008 | 0.004 | 0.010 |
| Study hours | 0.024*** | 0.008 | -0.007 | 0.007 | -0.017* | 0.009 |
| Lyceum | 0.264*** | 0.032 | -0.171*** | 0.038 | -0.092*** | 0.034 |
| Student loan information | -0.003 | 0.018 | 0.007 | 0.015 | -0.003 | 0.019 |

Notes: The estimation includes six dummies for provincial residence. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table B.4: University Choice of Boys: Marginal Effects

| Do you intend to enrol in university? | | Yes | | No | | I don't know | |
|---------------------------------------|---------------|-------------|-------|-------------|-------|--------------|-------|
| No. of observations (%) | | 659 (48.35) | | 339 (24.87) | | 365 (26.78) | |
| | | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Family background | | | | | | | |
| Family size | | -0.020 | 0.012 | 0.009 | 0.006 | 0.011 | 0.012 |
| Single parent | | -0.054 | 0.038 | -0.006 | 0.027 | 0.061 | 0.042 |
| Jointly decision making rule | | -0.031 | 0.020 | 0.012 | 0.015 | 0.020 | 0.019 |
| Father's education: | Middle school | 0.130*** | 0.037 | -0.057 | 0.036 | -0.073* | 0.039 |
| | High school | 0.152*** | 0.041 | -0.095*** | 0.035 | -0.057 | 0.046 |
| | University | 0.225*** | 0.041 | -0.133*** | 0.044 | -0.092* | 0.053 |
| Mother's education: | Middle school | 0.003 | 0.043 | 0.023 | 0.043 | -0.026 | 0.050 |
| | High school | 0.040 | 0.043 | 0.022 | 0.045 | -0.062 | 0.050 |
| | University | 0.049 | 0.053 | -0.013 | 0.047 | -0.035 | 0.065 |
| Working father | | -0.002 | 0.036 | 0.048* | 0.025 | -0.046 | 0.037 |
| Self-employed father | | -0.006 | 0.020 | -0.030 | 0.020 | 0.036 | 0.023 |
| Working mother | | 0.015 | 0.024 | -0.008 | 0.018 | -0.007 | 0.025 |
| Income quintile | 1st | 0.067** | 0.026 | -0.025 | 0.025 | -0.042 | 0.029 |
| | 3rd | 0.015 | 0.026 | -0.032 | 0.020 | 0.017 | 0.030 |
| | 4th | 0.005 | 0.028 | -0.032 | 0.026 | 0.027 | 0.034 |
| | 5th | 0.057 | 0.035 | -0.026 | 0.034 | -0.031 | 0.036 |
| Homeownership | | 0.054* | 0.031 | 0.005 | 0.016 | -0.060** | 0.030 |
| Urban | | 0.013 | 0.023 | 0.020 | 0.017 | -0.033 | 0.024 |
| Residential | | 0.031 | 0.021 | 0.021 | 0.014 | -0.052** | 0.023 |
| Student Characteristics | | | | | | | |
| No interaction | | 0.048** | 0.021 | 0.016 | 0.017 | -0.064*** | 0.020 |
| Parental influence | | 0.028 | 0.026 | -0.037** | 0.015 | 0.009 | 0.025 |
| Low job aspiration | | -0.067** | 0.032 | 0.040** | 0.018 | 0.027 | 0.032 |
| Reservation wage (log) | | 0.254*** | 0.043 | -0.737*** | 0.100 | 0.483*** | 0.069 |
| Find a job | | 0.069*** | 0.022 | -0.077*** | 0.021 | 0.007 | 0.022 |
| Find the desired job | | 0.122*** | 0.022 | -0.114*** | 0.016 | -0.009 | 0.025 |
| Find a well-paid job | | 0.009 | 0.024 | 0.000 | 0.017 | -0.009 | 0.026 |
| Labour market opportunities: | Scale down | -0.144*** | 0.052 | 0.061 | 0.039 | 0.083 | 0.057 |
| | Try hard | 0.035 | 0.044 | 0.013 | 0.033 | -0.048 | 0.049 |
| | Confident | 0.031 | 0.046 | 0.097*** | 0.033 | -0.128** | 0.051 |
| Risk preferences: | Averse | -0.037 | 0.028 | 0.017 | 0.026 | 0.020 | 0.035 |
| | Lover | -0.054** | 0.024 | 0.023 | 0.019 | 0.031 | 0.024 |
| Time preferences: | Low | -0.021 | 0.026 | 0.041* | 0.022 | -0.020 | 0.029 |
| | High | -0.013 | 0.024 | 0.041*** | 0.015 | -0.028 | 0.023 |
| Religious intensity: | Medium | -0.050** | 0.022 | -0.020 | 0.017 | 0.070*** | 0.023 |
| | High | 0.018 | 0.052 | -0.004 | 0.034 | -0.015 | 0.050 |

(continued)

Table B.4: University Choice of Boys: Marginal Effects (continued)

| Do you intend to enrol in university? | Yes | | No | | I don't know | |
|---------------------------------------|-------------|-------|-------------|-------|--------------|-------|
| No. of observations (%) | 659 (48.35) | | 339 (24.87) | | 365 (26.78) | |
| | M.E. | S.E. | M.E. | S.E. | M.E. | S.E. |
| Student characteristics | | | | | | |
| Smoker | 0.027 | 0.018 | -0.014 | 0.014 | -0.013 | 0.021 |
| Sport | -0.013 | 0.021 | -0.031* | 0.016 | 0.044** | 0.023 |
| Internet | -0.021 | 0.033 | 0.005 | 0.021 | 0.017 | 0.036 |
| Grade retention | -0.060*** | 0.023 | 0.024* | 0.013 | 0.036 | 0.026 |
| Previous year mark | 0.059*** | 0.016 | -0.065*** | 0.013 | 0.006 | 0.017 |
| Math mark | 0.033*** | 0.009 | -0.007 | 0.007 | -0.026*** | 0.009 |
| Study hours | 0.012 | 0.010 | 0.004 | 0.008 | -0.017 | 0.011 |
| Lyceum | 0.259*** | 0.025 | -0.162*** | 0.033 | -0.098*** | 0.033 |
| Student loan information | 0.043** | 0.022 | -0.021 | 0.017 | -0.022 | 0.021 |

Notes: The estimation includes six dummies for provincial residence. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

C Propensity Weight Estimation

The first step to estimate the propensity weight is the estimation of the probability of playing sports. For the estimation of the probabilistic model we adopt a probit model with conditional probability given by

$$P(S_i = 1 | X_i^S, \beta^S) = \Phi(X_i^{S'} \beta^S), \quad (\text{C.1})$$

where $\Phi(\cdot)$ is the standard normal cdf and X_i^S is a vector of observed characteristics. The observed binary variable S_i is equal to 1 if the child plays sport in her leisure time, 0 otherwise. The estimated probability is then used to derive the propensity weight described in equation (4) and adopted to balance the covariates that specify the MNL university model. In order to estimate the propensity weight we start with a parsimonious probit specification (Model 1 in Table C.3) and then control for additional observable heterogeneity (Model 2 to Model 5). For each model we estimate the propensity weight and use it to test differences in means of covariates between the sporty and non-sporty sub-samples. We choose the model that minimizes the imbalance of covariates of the MNL model as measure by t -tests on difference in means and a joint test for the difference in means for all the covariates. Among the estimated models, Model 5 is the model that satisfies the criteria. For Model 5, multivariate analysis of variance (MANOVA) cannot reject the null hypothesis that the vectors of means are equal across the two samples with a probability value of 0.999 and, further, only the dummy “self-employed father” appears to be imbalanced. The criterion for the specification of X_i^S is based on the choice of variables that explain the outcome (sport participation) and help balance the covariates of the university choice model.

Table C.1: University Choice by Non-Sporty and Sporty Samples

| “Do you intend to enrol in university?” | Yes | No | DK | Total |
|---|-------|-------|-------|-------|
| Non-Sporty sample | 1,019 | 407 | 505 | 1,931 |
| | 52.77 | 21.08 | 26.15 | 100 |
| | 70.08 | 75.09 | 71.43 | 71.44 |
| Sporty sample | 435 | 135 | 202 | 772 |
| | 56.35 | 17.49 | 26.17 | 100 |
| | 29.92 | 24.91 | 28.57 | 28.56 |
| Total | 1,454 | 542 | 707 | 2,703 |
| | 53.79 | 20.05 | 26.16 | 100 |
| | 100 | 100 | 100 | 100 |

Table C.2: Descriptive Statistics of Variables used in Sport Participation Model

| Variable | Definition | Mean | Std. Dev. |
|------------------------------|---|-------|-----------|
| Female | = 1 if child is female | 0.496 | |
| Smoker | = 1 if child smokes | 0.428 | |
| Health status | child health condition measured on a Likert scale 0-10 | 8.013 | 1.995 |
| Religiousness | = 1 if child belongs to a church | 0.774 | |
| Propensity for indebtedness | = 1 if child has high propensity for indebtedness | 0.294 | |
| Leisure hours | time devoted to leisure | 7.134 | 4.434 |
| Study hours | time devoted to study | 2.416 | 1.506 |
| Propensity for saving | = 1 if child saves some of pocket money | 0.745 | 0.436 |
| Risk averse | = 1 if child is risk averse | 0.122 | |
| Risk neutral | = 1 if child is risk neutral | 0.676 | |
| Lyceum | = 1 if child attends a lyceum | 0.356 | |
| Math grade | average mathematics' grade | 6.564 | 1.298 |
| No interaction | = 1 if child interacted with nobody for the university choice | 0.462 | |
| Parental influence | = 1 parents influenced child's university choice | 0.653 | |
| Find a job | = 1 if university is necessary to find a job | 0.484 | |
| Find the desired job | = 1 if university is necessary to find the desired job | 0.587 | |
| Find a well-paid job | = 1 if university is necessary to find a well-paid job | 0.534 | |
| Low job aspiration | = 1 child aspires to unskilled jobs | 0.129 | |
| Scale down | = 1 if child expects to scale down her ambitions | 0.110 | |
| Try hard | = 1 if child expects to find a job with many difficulties | 0.474 | |
| Confident | = 1 if child expects to find a job easily | 0.331 | |
| Family size | number of family members | 4.041 | 1.008 |
| Joint decision making rule | = 1 if family makes decisions jointly | 0.371 | |
| Lone parent | = 1 if child lives in a family with one parent | 0.092 | |
| Father education: university | = 1 if father has a university or post-graduate degree | 0.156 | |
| Mother education: university | = 1 if mother has a university or post-graduate degree | 0.148 | |
| Income | Family income divided by 1000 (euro) | 2.594 | 1.409 |
| Income squared | Family squared income divided by 1000 (euro) | 8.713 | 11.386 |
| Urban | = 1 if child lives in a urban area | 0.296 | |
| Belluno | = 1 if child lives in Belluno | 0.038 | |
| Padua | = 1 if child lives in Padua | 0.118 | |
| Rovigo | = 1 if child lives in Rovigo | 0.056 | |
| Treviso | = 1 if child lives in Treviso | 0.106 | |
| Venice | = 1 if child lives in Venice | 0.128 | |
| Verona | = 1 if child lives in Verona | 0.309 | |

Table C.3: Sport Participation Models: Probit Estimates

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|-----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Female | -0.501*** <i>0.053</i> | -0.484*** <i>0.059</i> | -0.462*** <i>0.060</i> | -0.445*** <i>0.061</i> | -0.454*** <i>0.061</i> |
| Smoker | -0.110** <i>0.053</i> | -0.079 <i>0.055</i> | -0.078 <i>0.056</i> | -0.084 <i>0.057</i> | -0.0968* <i>0.057</i> |
| Health status | 0.0633*** <i>0.014</i> | 0.0629*** <i>0.014</i> | 0.0543*** <i>0.014</i> | 0.0537*** <i>0.014</i> | 0.0535*** <i>0.014</i> |
| Religiousness | | 0.127** <i>0.064</i> | 0.118* <i>0.065</i> | 0.124* <i>0.066</i> | 0.111* <i>0.066</i> |
| Propensity for indebtedness | | 0.061 <i>0.057</i> | 0.053 <i>0.058</i> | 0.048 <i>0.058</i> | 0.057 <i>0.058</i> |
| Time for leisure | | -0.0266*** <i>0.007</i> | -0.0278*** <i>0.007</i> | -0.0289*** <i>0.007</i> | -0.0287*** <i>0.007</i> |
| Time for studying | | -0.0821*** <i>0.022</i> | -0.0865*** <i>0.023</i> | -0.0851*** <i>0.023</i> | -0.0885*** <i>0.023</i> |
| Propensity for saving | | 0.142** <i>0.063</i> | 0.128** <i>0.064</i> | 0.153** <i>0.065</i> | 0.163** <i>0.065</i> |
| Risk averse | | -0.142 <i>0.098</i> | -0.140 <i>0.099</i> | -0.141 <i>0.099</i> | -0.143 <i>0.099</i> |
| Risk neutral | | 0.011 <i>0.067</i> | 0.025 <i>0.068</i> | 0.031 <i>0.068</i> | 0.032 <i>0.068</i> |
| Lyceum | | 0.152*** <i>0.057</i> | 0.122** <i>0.060</i> | 0.093 <i>0.063</i> | 0.096 <i>0.064</i> |
| Math mark | | | 0.0488** <i>0.021</i> | 0.0510** <i>0.021</i> | 0.0524** <i>0.021</i> |
| No interaction | | | -0.120** <i>0.054</i> | -0.110** <i>0.054</i> | -0.112** <i>0.055</i> |
| Parental influence | | | 0.007 <i>0.057</i> | -0.002 <i>0.058</i> | -0.001 <i>0.058</i> |
| Find a job | | | 0.026 <i>0.062</i> | 0.017 <i>0.062</i> | 0.004 <i>0.062</i> |
| Find the desired job | | | -0.028 <i>0.061</i> | -0.026 <i>0.061</i> | -0.018 <i>0.061</i> |
| Find a well-paid job | | | 0.010 <i>0.060</i> | 0.000 <i>0.060</i> | 0.002 <i>0.060</i> |
| Low job aspiration | | | -0.221*** <i>0.085</i> | -0.217** <i>0.086</i> | -0.213** <i>0.086</i> |
| Scale down | | | 0.185 <i>0.131</i> | 0.197 <i>0.131</i> | 0.185 <i>0.132</i> |
| Try hard | | | 0.261** <i>0.109</i> | 0.279** <i>0.109</i> | 0.263** <i>0.110</i> |
| Confident | | | 0.400*** <i>0.112</i> | 0.409*** <i>0.113</i> | 0.395*** <i>0.113</i> |

(continued)

Table C.3: Sport Participation Models: Probit Estimates (Continued)

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------------|---------|---------|---------|---------------------------|---------------------------|
| Family size | | | | -0.024 <i>0.028</i> | -0.022 <i>0.029</i> |
| Single parent | | | | -0.155 <i>0.101</i> | -0.157 <i>0.102</i> |
| Joint decision making rule | | | | -0.197*** <i>0.056</i> | -0.195*** <i>0.056</i> |
| Father educ. - university | | | | -0.129 <i>0.090</i> | -0.147 <i>0.091</i> |
| Mother educ. - university | | | | 0.112 <i>0.089</i> | 0.101 <i>0.090</i> |
| Income/1000 | | | | 0.119* <i>0.061</i> | 0.119* <i>0.062</i> |
| Income squared/1000 | | | | -0.009 <i>0.008</i> | -0.009 <i>0.008</i> |
| Urban | | | | | 0.081 <i>0.060</i> |
| Belluno | | | | | -0.273* <i>0.160</i> |
| Padua | | | | | 0.211** <i>0.094</i> |
| Rovigo | | | | | 0.102 <i>0.128</i> |
| Treviso | | | | | 0.100 <i>0.097</i> |
| Venice | | | | | 0.037 <i>0.095</i> |
| Verona | | | | | 0.043 <i>0.072</i> |
| No. of observations | 2,703 | 2,703 | 2,703 | 2,703 | 2,703 |
| Adjusted Pseudo- R^2 | 0.038 | 0.045 | 0.05 | 0.054 | 0.053 |

Notes: Cluster-robust standard errors at the school level are in italics. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table C.4: Weighted and Unweighted Means of Predictor Variables of the University Choice Model by Sporty and Non-Sporty Samples

| No. of observations (%) | Sporty Sample | | Non-Sporty Sample | | | |
|---------------------------|---------------|---------------|-------------------|---------|---------|---------|
| | 772 (28.56) | 1,931 (71.44) | | | | |
| | | Unweighted | Model 2 | Model 3 | Model 4 | Model 5 |
| Family size | 4.039 | 4.041 | 4.062 | 4.056 | 4.061 | 4.021 |
| Single parent | 0.075 | 0.099** | 0.070 | 0.096 | 0.075 | 0.066 |
| Joint decision | 0.326 | 0.389*** | 0.368* | 0.374** | 0.320 | 0.329 |
| Father educ. - middle | 0.451 | 0.446 | 0.438 | 0.438 | 0.408* | 0.447 |
| Father educ. - high | 0.337 | 0.318 | 0.341 | 0.319 | 0.325 | 0.328 |
| Father educ. - university | 0.162 | 0.153 | 0.152 | 0.175 | 0.184 | 0.165 |
| Mother educ. - middle | 0.431 | 0.462 | 0.443 | 0.456 | 0.435 | 0.416 |
| Mother educ. - high | 0.346 | 0.323 | 0.359 | 0.319 | 0.329 | 0.352 |
| Mother educ. - university | 0.166 | 0.141 | 0.127** | 0.154 | 0.170 | 0.166 |
| Working father | 0.920 | 0.899* | 0.930 | 0.912 | 0.918 | 0.921 |
| Self-employed father | 0.380 | 0.350 | 0.352 | 0.382 | 0.365 | 0.321** |
| Working mother | 0.679 | 0.688 | 0.699 | 0.690 | 0.683 | 0.703 |
| Income quintile: 1st | 0.166 | 0.214*** | 0.196 | 0.198* | 0.163 | 0.158 |
| Income quintile: 3rd | 0.199 | 0.200 | 0.207 | 0.181 | 0.185 | 0.188 |
| Income quintile: 4th | 0.219 | 0.193 | 0.207 | 0.209 | 0.205 | 0.219 |
| Income quintile: 5th | 0.246 | 0.181*** | 0.209* | 0.211 | 0.273 | 0.244 |
| Homeownership | 0.895 | 0.854*** | 0.870 | 0.859** | 0.872 | 0.876 |
| Urban | 0.313 | 0.288 | 0.276 | 0.272* | 0.289 | 0.295 |
| Residential | 0.666 | 0.648 | 0.633 | 0.670 | 0.676 | 0.661 |
| Female | 0.343 | 0.557*** | 0.355 | 0.330 | 0.352 | 0.346 |
| No interaction | 0.435 | 0.473* | 0.443 | 0.439 | 0.473 | 0.427 |
| Parental influence | 0.659 | 0.651 | 0.688 | 0.633 | 0.633 | 0.641 |
| Low job aspiration | 0.092 | 0.144*** | 0.135*** | 0.106 | 0.078 | 0.085 |
| Reservation wage (log) | 7.319 | 7.305 | 7.339 | 7.345 | 7.314 | 7.327 |
| Find job | 0.501 | 0.476 | 0.468 | 0.481 | 0.509 | 0.517 |
| Find the desired job | 0.588 | 0.587 | 0.571 | 0.584 | 0.580 | 0.593 |
| Find a well-paid job | 0.557 | 0.525 | 0.540 | 0.569 | 0.573 | 0.556 |
| Scale down | 0.092 | 0.117* | 0.092 | 0.093 | 0.100 | 0.091 |
| Try hard | 0.453 | 0.483 | 0.500* | 0.429 | 0.464 | 0.465 |
| Confident | 0.403 | 0.302*** | 0.312*** | 0.412 | 0.392 | 0.399 |
| Risk averse | 0.101 | 0.131** | 0.108 | 0.101 | 0.085 | 0.106 |
| Risk lover | 0.194 | 0.205 | 0.162* | 0.174 | 0.177 | 0.175 |
| Time low | 0.106 | 0.126 | 0.098 | 0.097 | 0.098 | 0.100 |
| Time high | 0.343 | 0.346 | 0.377 | 0.369 | 0.359 | 0.350 |
| Religious medium | 0.383 | 0.390 | 0.418 | 0.396 | 0.402 | 0.420 |
| Religious high | 0.047 | 0.061 | 0.043 | 0.045 | 0.054 | 0.053 |
| Smoker | 0.395 | 0.442** | 0.377 | 0.391 | 0.421 | 0.416 |
| Grade retention | 0.179 | 0.184 | 0.180 | 0.181 | 0.216* | 0.181 |
| Previous year grade | 6.810 | 6.800 | 6.793 | 6.908** | 6.836 | 6.834 |
| Math mark | 6.668 | 6.522*** | 6.598 | 6.771 | 6.747 | 6.718 |
| Study hours | 2.169 | 2.514*** | 2.120 | 2.256 | 2.220 | 2.164 |
| Lyceum | 0.381 | 0.345* | 0.367 | 0.398 | 0.413 | 0.346 |
| Student loan information | 0.361 | 0.355 | 0.343 | 0.372 | 0.332 | 0.369 |

Table C.4: Weighted and Unweighted Means - (continued)

| No. of observations (%) | Sporty Sample | | Non-Sporty Sample | | | |
|--|---------------|---------|-------------------|----------|---------|---------|
| | 772 (28.56) | | 1,931 (71.44) | | | |
| | | | Unweighted | Weighted | | |
| | | | Model 2 | Model 3 | Model 4 | Model 5 |
| Belluno | 0.026 | 0.043** | 0.035 | 0.031 | 0.045** | 0.030 |
| Padua | 0.132 | 0.112 | 0.101* | 0.098** | 0.122 | 0.117 |
| Rovigo | 0.052 | 0.058 | 0.054 | 0.045 | 0.038 | 0.038 |
| Treviso | 0.117 | 0.102 | 0.128 | 0.122 | 0.104 | 0.114 |
| Venice | 0.115 | 0.133 | 0.110 | 0.119 | 0.136 | 0.122 |
| Verona | 0.324 | 0.303 | 0.317 | 0.339 | 0.313 | 0.346 |
| <i>p</i> -value of multiple analysis of variance | | 0.000 | 0.000 | 0.028 | 0.879 | 0.999 |

Notes: For reasons of space, we do not report means for Model 1 but fails in balancing most of the reported covariates. * indicates differences with “sporty sample” that are statistically significant at at 10%, ** at 5%, and *** at 1%.

Table C.5: University Choice Model: Weighted MNL Estimates

| Do you intend to enrol in university? | | Yes | | No | |
|---------------------------------------|---------------|-----------|-------|-----------|-------|
| | | Coeff. | S.E. | Coeff. | S.E. |
| Family size | | -0.130 | 0.086 | 0.183* | 0.103 |
| Single parent | | 0.035 | 0.276 | -0.459 | 0.294 |
| Jointly decision making rule | | -0.207 | 0.142 | 0.135 | 0.199 |
| Father's education: | Middle school | 0.637*** | 0.244 | -0.083 | 0.367 |
| | High school | 0.636** | 0.247 | -0.539 | 0.363 |
| | University | 1.302*** | 0.313 | -0.591 | 0.560 |
| Mother's education: | Middle school | 0.023 | 0.297 | 0.288 | 0.442 |
| | High school | 0.229 | 0.270 | -0.077 | 0.452 |
| | University | 0.325 | 0.365 | -0.473 | 0.628 |
| Working father | | 0.107 | 0.249 | 0.284 | 0.321 |
| Self-employed father | | -0.033 | 0.139 | -0.170 | 0.214 |
| Working mother | | 0.256 | 0.159 | 0.091 | 0.204 |
| Income quintile: | 1st | 0.385** | 0.182 | -0.134 | 0.283 |
| | 3rd | 0.173 | 0.206 | -0.593** | 0.291 |
| | 4th | 0.245 | 0.222 | -0.245 | 0.344 |
| | 5th | 0.337 | 0.229 | -0.426 | 0.419 |
| Homeownership | | 0.472** | 0.217 | -0.042 | 0.227 |
| Urban | | 0.225 | 0.154 | 0.236 | 0.192 |
| Residential | | 0.229 | 0.157 | 0.130 | 0.176 |
| Female | | 0.355* | 0.188 | -0.696** | 0.289 |
| No interaction | | 0.437*** | 0.133 | 0.450** | 0.217 |
| Parental influence | | 0.166 | 0.160 | -0.509*** | 0.192 |
| Low job aspiration | | -0.858*** | 0.213 | 0.436** | 0.221 |
| Reservation wage (log) | | -0.154 | 0.170 | -8.890*** | 0.791 |
| Find a job | | 0.492*** | 0.153 | -0.760*** | 0.207 |
| Find the desired job | | 0.737*** | 0.164 | -1.394*** | 0.228 |
| Find a well-paid job | | 0.224 | 0.200 | -0.007 | 0.235 |
| Labour market opportunities: | Scale down | -0.533 | 0.332 | 0.744 | 0.584 |
| | Try hard | 0.664** | 0.266 | 0.705 | 0.557 |
| | Confident | 0.773*** | 0.283 | 1.412*** | 0.548 |
| Risk preferences: | Averse | -0.385* | 0.208 | 0.085 | 0.276 |
| | Lover | -0.380** | 0.164 | 0.117 | 0.234 |
| Time preferences: | Low | -0.050 | 0.208 | 0.320 | 0.277 |
| | High | 0.147 | 0.141 | 0.176 | 0.199 |
| Religious intensity: | Medium | -0.291* | 0.163 | -0.330 | 0.208 |
| | High | 0.276 | 0.366 | -0.013 | 0.427 |

(continued)

Table C.5: University Choice Model: Weighted MNL Estimates (continued)

| Do you intend to enrol in university? | Yes | | No | |
|---------------------------------------|----------|-------|-----------|-------|
| | Coeff. | S.E. | Coeff. | S.E. |
| Smoker | 0.038 | 0.137 | -0.359* | 0.194 |
| Sport | 0.008 | 0.134 | -0.329* | 0.176 |
| Internet | 0.090 | 0.290 | 0.114 | 0.391 |
| Grade retention | -0.432** | 0.179 | 0.517** | 0.222 |
| Previous year mark | 0.506*** | 0.109 | -0.493** | 0.199 |
| Math mark | 0.164*** | 0.056 | -0.008 | 0.079 |
| Study hours | 0.185*** | 0.066 | 0.119 | 0.088 |
| Lyceum | 1.836*** | 0.175 | -1.706*** | 0.422 |
| Student loan information | 0.132 | 0.136 | -0.179 | 0.179 |

Notes: “I don’t know” is the baseline outcome. The estimation includes a constant and six dummies for provincial residence. S.E. is for cluster-robust standard errors at the high school level. Pseudo- R^2 is 0.456. * significant at 10% level; ** significant at 5% level; *** significant at 1% level. No. of observations 2,703.

D Background Information

The Italian School System

The Italian school system has two main levels: primary and secondary schools. The primary school provides 5 years of education, followed by secondary education, which attendance of three years in middle schools and five years in high schools. Up to middle school, the system provides a main core curriculum. Differentiation takes place when pupils choose a secondary high school according to their own and family preferences and aptitudes at the time of the choice. The secondary high school system is organized into three main paths: 1) Lyceum providing a general level of education oriented to tertiary education, 2) Technical school providing students with a technical profile for the job market, and 3) Vocational school offering a vocational training path mainly focused on manual tasks for job-oriented students.

At the end of each secondary level, middle and high school, pupils undertake a final exam, which is designed to signal individual learning skills, attitudes toward studying, and personal interests. Access to higher education is open to almost all types of upper-secondary education attended and does not depend on the grade achieved at the high school final examination. Only recently, enrolment in some universities, such as medical schools and scientific curricula, has become dependent on passing a national examination.

The Italian University System

The Italian tertiary education includes three main academic cycles: 1) Laurea Triennale, corresponding to a bachelor degree, which lasts three years corresponding to 180 credits,

allowing access to a second cycle degree (sometimes restricted by merit barriers), 2) Laurea Specialistica/Magistrale/Master, lasting two years, and 3) Doctorate programmes and specialization courses. Unlike other countries, the majority of university courses in Italy do not require compulsory lecture attendance leading to a single final exam. This has led to a large number of students taking their exams late, often because of their working student status, thus extending the higher education period beyond the regular period.

References

- [1] Andersen, S., G. W. Harrison, M. I. Lau and E. E. Rutström (2008): “Eliciting Risk and Time Preferences,” *Econometrica*, 76(3): 583-618.
- [2] Coller, M. and M. B. Williams (1999): “Eliciting Individual Discount Rates,” *Experimental Economics*, 2(2): 107-127.
- [3] Harrison, G. W., M. I. Lau and M. B. Williams (2002): “Estimating Individual Discount Rates in Denmark: A Field Experiment,” *American Economic Review*, 92(5): 1606-1617.
- [4] Harrison, G. W., J. A. List and C. Towe (2007): “Naturally Occurring Preferences and Exogenous Laboratory Experiments: A Case Study of Risk Aversion,” *Econometrica*, 75(2): 433-458.
- [5] Holt, C. A. and S. K. Laury (2002): “Risk Aversion and Incentive Effects,” *American Economic Review*, 92(5): 1644–1655.
- [6] Kahneman, D. and A. Tversky (1979): “Prospect Theory: An Analysis of Decision under Risk,” *Econometrica*, 47(2): 263-291.
- [7] Levitt, S. D. and J. A. List (2007): “What Do Laboratory Experiments Measuring Social Preferences Tell Us About the Real World,” *Journal of Economic Perspectives*, 21(2): 153-174.
- [8] _____ (2009): “Field Experiments in Economics: The Past, the Present, and the Future,” *European Economic Review*, 53(1): 1-18.
- [9] List, J. A. (2009): “An Introduction to Field Experiments in Economics,” *Journal of Economic Behavior & Organization*, 70(3): 439-442.
- [10] Menon, M. and F. Perali (2009): “Eliciting Risk and Time Preferences in Field Experiments: Are They Related to Cognitive and Non-Cognitive Outcomes? Are

Circumstances Important?" *Rivista Internazionale di Scienze Sociali*, 7(3-4): 561-627.