Higher education (related) choices in Portugal: joint decisions on institution type and leaving home

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The aim of this article is twofold: to further investigate the type of higher education institution choice using individual-level data on first-year students, and to establish the link between institution choice and the decision whether to leave home. The analysis was performed for Portuguese higher education by means of a bivariate probit model. Results indicated gender differences in the type of higher education institution choice. Socio-economic background appeared to constrain student choices and accessibility did play a role in their decisions. When it comes to the leaving home decision, the higher the income group and the higher the parents' literacy, the more likely it was that students stayed at home. Students with strong preferences over leisure activities tended to leave home to attend higher education.

Keywords: university; polytechnic institute; leaving home; accessibility

Introduction

Over the last quarter of the twentieth century, in most European countries, participation in higher education reached levels never experienced before, with important implications for the mix of students, who are nowadays recruited from a variety of socio-economic, cultural and educational backgrounds, and who differ in the way they experience higher education. One of the key facets of this process is that students are leaving home ever later, a phenomenon of major relevance in southern European countries. According to the Eurostudent report, in 2006, about 73% of Italian higher education students lived with parents or relatives, while in Spain that share was 64% (Higher Education Information System 2008). In that study Portugal ranked third with 55% home-living students. This proportion went up to almost 60% for students aged under 21.

The leaving home decision is a sign that transition into completely independent living is taking place. Whether to stay at home or not is mainly a financial decision, but it is also determined by family resources, community ties, and aspirations and expectations (Patiniotis and Holdsworth 2005). Late home leaving has important implications for individuals' educational careers. The higher education institution choice of those students staying at home is more likely to be geographically constrained, and more dependent on the spatial distribution of higher education institutions. This brings accessibility issues to the centre of the analysis and suggests

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the simultaneous investigation of the determinants of the choice of higher education and the leaving home decision.

The aim of this article is twofold. We wanted to further investigate the type of higher education institution (i.e. subsystem) choice using individual-level data on first-year students, on the one hand, and to establish the link between subsystem choice and the leaving home decision, on the other hand. Particular emphasis was put on geographical inequalities, and student geographic mobility was analysed. Possible inequalities in socio-economic, cultural and geographical background were identified and explored.

The analysis was performed on the Portuguese higher education system. The research benefited from a data set on all first-time/first-year students entering higher education in the academic year 2006/2007, which included information on several relevant variables ranging from cultural and socio-economic background to the reasons behind student decisions.

We estimated a bivariate probit model, which linked the choice of type of higher education institution (university versus polytechnic institute) and the leaving home decision. Estimation results pointed out gender differences in the choice of the type of higher education institution. Socio-economic background appeared to constrain student choices and accessibility did play a role in their decisions. When it comes to the leaving home decision, the higher the income group and the higher the parents' literacy, the more likely it was that students stayed at home. Students who left home were more likely to attend a university rather than a polytechnic institution.

The article unfolds as follows. The next section reviews the literature related to those two decisions: which subsystem and whether to leave home? The Portuguese context is described, along with the methods and data. The results of the study are then presented, before some conclusions are drawn.

Higher education (related) choices

Demand for higher education has long been analysed, for different countries and educational contexts, and its multiple dimensions and related decisions have been investigated. Whether to apply for higher education, the choice of the institution type, the institution to attend and the field of study are among the most studied decisions. The choice of a higher education institution to attend is a rather complex process, involving tensions that are, simultaneously, internal and external, personal and social, individual and from the reference group. Individual choices reflect socio-economic and cultural contexts, intelligence, competences, values and interests in the construction of vocational aspirations, and self-esteem. But choices comprise a complex set of expectations, aspirations, desires and representations of the future as well. Nevertheless, those complexities involved in the choice process are not easily dealt with in applied work.

The present study concentrated on the choice of the type of higher education institution to attend. It linked that choice with the leaving home decision, which individuals make in their transition into adulthood. The analysis has been restricted to a set of choice determinants, which do not exhaust the choice analysis but allow for the mapping of the general choice process.

Institution type

The issue of selecting a higher education institution has been extensively analysed in the literature. Depending on the educational system under analysis, colleges and

technical schools, two-year and four-year colleges, as well as non-school options may form part of the set of available alternatives. Investment and consumption motives have been pointed out as being among the main reasons behind student choices. From a human capital standpoint, prospective students aim at improving their future labour market outcomes, whereas from a consumption point of view, students are attracted by local amenities and leisure facilities. Some studies have emphasised different perspectives of the choice, by combining financial variables, as predicted by the human capital theory, with non-pecuniary variables, as suggested, for instance, by the theory of vocational personalities and work environments (Holland 1997). According to Holland's theory, students looked for environments that matched their personality in terms of skills and abilities.

Student ability, peer group effects, gender, schooling costs and family income are among the most analysed choice determinants, but their effects are not always consensual across the studies.

Student ability is expected to have an impact on post-secondary choices. Empirical work has used the secondary education grade point average as a proxy for ability, as that was not easy to measure. Rouse (1994) has concluded that, in the USA, students starting in a junior college showed lower measured ability when compared to those attending a four-year college. Sá, Florax, and Rietveld (2006) have found a similar result for the Netherlands; namely, the grade point average appeared to have the biggest marginal effect on the odds of choosing a university option rather than a professional college or a non-school alternative.

It might seem reasonable that students obtain information from the decisions of other students, who have had to decide in comparable situations. Peer group effects are likely to exist and have been documented in several studies. Amado Tavares et al. (2008) recognised the opinions of friends and family as the main factors influencing the choice decisions of Portuguese students. Other studies took ability as the observed peer characteristic that might influence others' behaviour (Winston and Zimmerman 2004).

Gender appears to play a role in post-secondary education decisions, but results are not uniform across studies (see, for instance, Amado Tavares et al. 2008; Ordovensky 1995; Sá, Florax, and Rietveld 2006).

Some studies have identified a negative effect of the direct costs of a schooling alternative (such as tuition and books) on the choice of that alternative (see Manski and Wise 1983). There was, however, evidence that direct costs did not play a role in the choice of a post-secondary alternative. For instance, Ordovensky (1995) found that direct costs of education alternatives did not have a significant effect on the choice between vocational and academic programmes at colleges and universities. When it comes to costs, the role of tuition fees has been probably the most explored aspect of higher education demand. The relative tuition of higher education alternatives has been supported as a determinant of college enrolment composition (Rouse 1994).

Household income is another important determinant of higher education choices. Parental occupation and/or education are often used as proxies for income, but also to capture the independent positive effect they might have on students' decisions (Nguyen and Taylor 2003).

Results from previous studies also show that there is a prominent spatial dimension to the choice behaviour of high school graduates. Depending on accessibility to higher education institutions, students might opt for attending higher education in

their home region or for moving to another region. Sá, Florax, and Rietveld (2006) concluded that geographic accessibility did play a role in determining student choices; namely, accessibility to professional colleges had a positive influence on going to professional college, while accessibility to university institutions exerted a positive influence on decisions to continue to university.

Leaving home decision

Although the economics of household behaviour have emphasised the interdependence between human capital investments, labour supply and family arrangements, only recently have studies started looking at them simultaneously (see Sá, Florax, and Rietveld [2007] for the Netherlands; Giannelli and Monfardini [2000, 2003] for Italy; Martinez-Granado and Ruiz-Castillo [2002] for Spain).

For many students, attending higher education means the first opportunity to leave home and develop a taste for independence (Mulder and Clark 2002). The decision to move out of home to attend university or college has been analysed at the aggregate level, that is, at the city level or state level, and at the individual level. Some studies have gone further by relating the leaving home decision to attend higher education with higher education graduate mobility (see, for instance, Faggian, McCann, and Sheppard 2006; McCann and Sheppard 2001).

Housing rents have been identified as one of the main factors behind the decision to stay at the parents' house (Ermisch 1999; Ermisch and Di Salvo 1997; Giannelli and Monfardini 2000, 2003; Holdsworth, Voas, and Tranmer 2002; Martínez-Granado and Ruiz-Castillo 2002). It appears that higher house prices delay home leaving and encourage returns to the parental home (Ermisch 1999).

Some family-related aspects were also found to be determinants of student choices. Family socio-economic background and its structure are among the most analysed aspects (Manacorda and Moretti 2006). According to Ermisch (1999), higher parental income made it more likely that the adult child stayed living at home. Students' own income also affected the manner in which youngsters left home, as well as the age of departure (Ermisch and Di Salvo 1997). Gierveld, Liefbroer, and Beekink (1991) distinguished between transferable and non-transferable resources, and concluded that high levels of the former facilitated leaving home decisions, whereas high levels of the latter slowed down the home-leaving process. Giannelli and Monfardini (2003) concluded that Italian family background played a major role in shaping young adults' decisions.

Some gender and age differences have been found as well. According to Giannelli and Monfardini (2003), if the father had a university degree the probability of his adult child living with his/her parents nearly doubled for men and increased by 20% for women. Other decisions that youngsters make, such as working and studying decisions, seem also to have a strong relationship with living arrangement choices. For instance, living independently had a positive effect on the propensity to work (Martínez-Granado and Ruiz-Castillo 2002). Recently, in a study that disentangles economic from cultural effects, Giuliano (2007) found that culture played the major role in determining living arrangements and leaving home decisions.

Summing up, a group of studies has looked at the decision of whether to move away from home or not, whereas another group of studies has analysed the choice of type of higher education institution by accounting for mobility issues (distance and accessibility). In the present study, we have tried to combine both lines of research by

simultaneously modelling two decisions: whether to apply to university education or polytechnic education and whether to leave home.

Empirical setting

The Portuguese higher education setting

The Portuguese higher education system is a binary system, with universities and polytechnic institutes as the main providers. Universities offer academic training, whereas polytechnics offer professionally oriented programmes. In both cases, there are public and private institutions. Some institutions include both a university and a polytechnic branch. In 2006/2007 the public sector comprised 14 universities, 5 institutions not integrated into universities, 15 polytechnic institutes, and 16 institutions not integrated into polytechnics; whereas for the private sector the numbers were 13, 35, 2 and 60 institutions respectively (Ministério da Ciência, da Tecnologia e do Ensino Superior 2006).

This structure was the result of recent policies aiming at assuring regional diversity and equity in access. In the 1980s, the geographical expansion of the higher education system was given special attention, with public polytechnic institutes being created in most districts. As a result, public polytechnic institutes are better spread over the country than public universities, and private institutions do not play a major role in geographic decentralisation (Teixeira et al. 2009).

Methods

The present analysis aimed at studying two simultaneous decisions that high school graduates make when applying to higher education: whether to attend a university or a polytechnic institute, and whether to leave home. Therefore each student ended up choosing among four pairs of alternatives: university and staying at home, university and leaving home, polytechnic institute and staying at home, polytechnic institute and leaving home.

A bivariate probit model has been applied, in which two equations were considered, one for each choice. Each individual was classified with respect to these two dichotomous variables. The model specification was:

$$
\begin{aligned}
&y_{i1}^{*} = \beta_1' x_{i1}, + \varepsilon_{i1}, y_{1i} = 1 \text{ if } y_{i1}^{*} > 0,0 \text{ otherwise} \\
&y_{i2}^{*} = \beta_2' x_{i2}, + \varepsilon_{i2}, y_{2i} = 1 \text{ if } y_{i2}^{*} > 0,0 \text{ otherwise} \\
&E(\varepsilon_{i1}) = E(\varepsilon_{i2}) = 0 \\
&Var(\varepsilon_{i1}) = Var(\varepsilon_{i2}) = 1 \\
&Cov(\varepsilon_{i1}, \varepsilon_{i2}) = p \\
&(\varepsilon_{i1}, \varepsilon_{i2}) \sim N_2(0,0,1,1,p)
\end{aligned}
$$

where y_{i1}^{*} and y_{i2}^{*} denoted latent variables; Y_{1i} and Y_{2i} denoted binary choice variables for higher education institution type and leaving home, respectively; x_{i1} and x_{i2} were vectors containing the variables that may affect those decisions; β_1' and β_2' were vectors of coefficients to be estimated; and N_2 stands for the bivariate normal distribution.

Data and sample characteristics

The data used in this study resulted from a survey conducted at the beginning of the academic year 2006/2007 among all first-time students. We have restricted our sample to first-time, first-cycle students, as we believed there was a specific choice process to each cycle of studies, which should be analysed separately. After eliminating missing data on all relevant variables, there were 13,527 students remaining in the sample.

We derived information on personal characteristics from the questionnaire, including gender, age and citizenship. Parents' education, family income, and sources of funding for higher education studies (student funding and external funding) were proxies for cultural and socio-economic background. Usually parents' education and family income were found to be highly correlated, which might cause estimators to have undesirable properties. In the present case, the problem was not so relevant, as we did not consider all educational levels; instead we just made the distinction between parents who did have a higher education diploma and those who did not. Furthermore, those variables might proxy different aspects of the students' background with influence on their choices. Income is a proxy for the economic background of the family, which may be related to the ability of the family to send the student to study away from home. Despite the high correlation between parents' education and income, parents with a higher education diploma might have a role on their own. Most of the parents holding a higher education diploma in our data set studied in universities, as they probably attended higher education in the 1970s or in the early 1980s, when polytechnic institutes were just starting their activity. It then might be the case that parents with higher education favour a university option rather than a polytechnic alternative, based on their own experience.

Students applying for the first time to a given programme had usually had similar schooling, but they might differ in their stock of human capital. In order to control for differences in this at entrance, we used information on the grade point average.

There was information on student decisions in the data. Regarding higher education choices, we knew whether the student had registered in a university or in a polytechnic institute, which higher education institution and which study programme. Study programmes were organised in 10 fields, as defined by the Ministério da Ciência, da Tecnologia e do Ensino Superior: agriculture, hard sciences, architecture, economics and business, sports and arts, education, law and social sciences, health, technologies and humanities. The main reasons behind the choice of institution and programme were also known; namely, whether the student valued some institutional characteristics like leisure, prestige, employability and location, and whether the opinions of family and friends were relevant for the choice. The data included information on whether the institution/programme was the first option, or whether it was a second best alternative.

Higher education choices are interrelated with other choices individuals make in their transition into adulthood. Whether individuals work or not and whether they leave home could be seen as higher education related choices that were covered in the data set. Their working decisions were taken as exogenous.

Finally, our study gave special attention to the spatial dimension by means of two measures of spatial accessibility to universities and polytechnic institutes. There is a large range of accessibility measures that could be applied to the higher education choice context. We wanted to characterise the overall accessibility to universities and polytechnic institutes, which required the use of a gravity-type measure. Following Sá, Florax, and Rietveld (2006), accessibility to universities was defined as:

$$accessibility\ universities_i = \sum_{j=1}^{U} \frac{1}{d_{ij}},$$

where U was the total number of universities and d_{ij} was the distance between the home district and the district where the university was located. The accessibility to polytechnic institutes was defined by analogy. Accessibility measures were strictly positive, and the higher the value, the higher the accessibility. As suggested in the literature, both measures entered the model in the logarithmic form (Rietveld and Bruinsma 1998). As well as these accessibility measures, we used a dummy variable equal to 1 if the higher education institution attended was located in the region where the student's family lived.

Table 1 shows the complete list of the variables in use, their description and some basic statistics. It reveals that about 54.4% and 53.6% of the students, respectively, opted for university education and for leaving home. Women made up 58.6% of the students, and about 31% of the students were in the highest family income group. As expected, on average, accessibility to polytechnic institutes was higher than accessibility to universities. Employability was positively valued by 86% of the students, and prestige by 75% of them. Half of the students valued location, whereas 43.6% gave leisure a positive rating.

Results

Using the variables described in the previous section, we estimated a bivariate probit model for the decisions on the higher education subsystem and on whether to leave home. The estimation results are shown in Table 2. Before looking at the results, it is important to note that the correlation parameter (*rho*) was statistically significantly different from zero, justifying the use of a bivariate probit model. That is, the bivariate probit model was preferable to two separate probit models.

Several interesting results emerge from Table 2, which in most cases confirmed our expectations. Starting with the university choice equation, in accordance with previous studies, the student's high school performance, as measured by the grade point average, had unequivocally a positive effect on the odds of choosing the university option. It seemed that there was a self-selection mechanism at work, with students with the highest grade point average preferring universities rather than polytechnic institutes. This result was in accordance with previous studies for other countries (see, for instance, Sá, Florax, and Rietveld [2006] for the Netherlands; and Rouse [1994] for the USA).

With respect to individual characteristics, there was a tendency for women students to attend polytechnic institutes. The older the student, the less likely it was that he/she attended university, corroborating the results of Sá, Florax, and Rietveld (2006) for the Netherlands. The nationality had no discernible effect.

The effect of students' cultural and socio-economic background has been included in the model, by means of family income and parent's education level. We confirmed the relevance of income in explaining higher education subsystem choice. Low income was among the reasons behind the decision to opt for attending a polytechnic institute. As income increased, the more likely the student was to choose university education, which was in line with the results of Amado Tavares et al. (2008). Parental education also had an impact on student choices, since those with parents holding a higher education diploma were more likely to choose a university.

Table 1. Descriptive statistics.

Variable	Description	Mean	SD
University	1 if university, 0 if polytechnic	0.544	
Leaving home	1 if leaving home, 0 otherwise	0.536	
Grade point average	Application grade point avergae	142.100	(20.179)
Portuguese	1 if portuguese nationality	0.977	
Female	1 if female, 0 otherwise	0.586	
Age	Age	19.887	(4.062)
Income1	1 if income below €375	0.051	
Income2	1 if income between €375 and €750	0.234	
Income3	1 if income between €750 and €1125	0.245	
Income4	1 if income between €1125 and €1500	0.163	
Income5	1 if income over €1500	0.307	
Parents' higher education	1 if parents finished higher education	0.288	
Student funding	1 if student funds themself	0.091	
External funding	1 if student plans to apply to external funding	0.076	
Work	1 if working, 0 otherwise	0.110	
1st option	1 if registering in the 1st option	0.673	
Agriculrure	1 if Agriculture is the field of study	0.037	
Architecture	1 if Architecture is the field of study	0.049	
Hard Sciences	1 if Hard Sciences is the field of study	0.049	
Law & Social Sciences	1 if Law and Social Sciences is the field of study	0.195	
Economics & Business	1 if Economics and Business is the field of study	0.143	
Sports & Arts	1 if Sports and Arts is the field of study	0.024	
Education	1 if Education is the field of study	0.046	
Humanities	1 if Humanities is the field of study	0.038	
Health	1 if Health is the field of study	0.234	
Technologies	1 if Technologies is the field of study	0.185	
Location	1 if location is positively valued	0.498	
Prestige	1 if prestige is positively valued	0.751	
Leisure	1 if leisure is positively valued	0.436	
Employability	1 if employability is positively valued	0.856	
Family & friends	1 if influenced by family and friends	0.488	
Accessibility universities	Accessibility to the whole university network	0.192	(0.050)
Accessibility polytechnics	Accessibility to the whole polytechnic network	0.246	(0.047)
Same region	1 if the higher education institution is located in the region where the student's family lives	0.505	
No. of observations		13,527	

Table 2. Bivariate probit estimation results for the sector choice and leaving home decision.

	University choice		Leaving home decision	
Variable	Mean	St.err.	Mean	St.err.
Grade point average	0.024 ***	(0.001)		
Portuguese	0.051	(0.083)	−0.117	(0.083)
Female	−0.247 ***	(0.027)	0.006	(0.026)
Age	−0.033 ***	(0.005)	−0.009 **	(0.005)
Income2	0.048	(0.058)	−0.201 ***	(0.066)
Income3	0.192 ***	(0.059)	−0.410 ***	(0.066)
Income4	0.285 ***	(0.062)	−0.482 ***	(0.069)
Income5	0.442 ***	(0.061)	−0.618 ***	(0.068)
Parents' higher education	0.358 ***	(0.032)	−0.116 ***	(0.032)
Student funding	0.009	(0.071)	−0.312 ***	(0.074)
External funding	0.151 ***	(0.047)	0.083 *	(0.049)
Work	−0.137 **	(0.059)	−0.327 ***	(0.060)
1st option	0.102 ***	(0.027)	−0.248 ***	(0.027)
Agriculture	−0.422 ***	(0.065)		
Architecture	−0.761 ***	(0.060)		
Hard Sciences	0.776 ***	(0.073)		
Economics and Business	−0.184 ***	(0.041)		
Sports & Arts	−0.185 **	(0.078)		
Education	−0.641 ***	(0.064)		
Humanities	1.020 ***	(0.080)		
Health	−1.034 ***	(0.042)		
Technologies	−0.018	(0.041)		
Location	0.066 *	(0.035)		
Prestige	0.079 ***	(0.029)		
Leisure	−0.093 ***	(0.036)	0.122 ***	(0.025)
Employability	−0.109 ***	(0.036)		
Family & friends	0.011	(0.024)		
Log accessibility universities	1.630 ***	(0.079)		
Log accessibility polytechnics	−2.089 ***	(0.098)		
Same region			−1.595 ***	(0.025)
Leaving home	0.248 ***	(0.045)		
Constant	−2.975 ***	(0.196)	1.849 ***	(0.137)
rho	−0.229 *** (0.030)			

Notes: 1. Significance at the 1, 5 and 10% level is indicated with ***, ** and *, respectively. 2. Robust standard errors in parenthesis. 3. Results obtained with a sample of 13,527 observations.

As human capital theory predicts, students had to bear education (related) costs, which brought funding availability to the centre of the analysis. Students benefiting from external funding (e.g. scholarships, loans) seemed to prefer university rather than polytechnic programmes. Whether the student paid or not for their studying expenses did not appear to have a statistically significant effect.

There were obvious differences among fields of study. Note that each coefficient showed the difference between a given field of study and law and social sciences, which has been taken as the baseline category. As such, students in the fields of hard sciences and humanities showed a higher probability of choosing a university alternative when compared to those in law and social sciences. For all the remaining fields we got the opposite result. This result might be due to the field composition of university and polytechnic institutes' programme supply.

When making higher education choices, students might look at several attributes of the programme and institution. In the present model we have accounted for location, prestige, leisure and employability. Students valuing positively location and prestige tended to attend universities, whereas those with a stronger preference over leisure and employability preferred polytechnic institutes. These results confirmed those previously obtained by Amado Tavares et al. (2008).

Notwithstanding its unequivocal role in higher education institution choice, as shown in previous studies (Amado Tavares et al. 2008), when it comes to subsystem choice, family and friends' opinions did not appear to be statistically significant. Although family and friends' opinions seemed relevant for the choice of a given higher education institution, that information pathway did not appear relevant in explaining the choice between university and polytechnic. That is, those effects worked in the same way for both polytechnic and university options. This result might also hide that, when making their decisions, students might weight differently the various sources of information in a way that reflected their general social/cultural objectives (e.g. distancing themselves from the perceived influence of parents).

Geographic accessibility did play a role in determining student choices. Accessibility to polytechnic institutes exerted a positive impact on the decision to attend polytechnic, while accessibility to university institutions had a positive influence on going to university. This confirmed the results of Sá, Florax, and Rietveld (2006) for the Netherlands.

Whether to work and whether to leave home were higher education related decisions. Results suggest that students who simultaneously worked chose polytechnic programmes, as did students who decided to stay at home. Working students and those students who wanted to stay with their parents were less mobile, meaning that they preferred to attend a nearby higher education institution. Given that polytechnic institutes are more evenly distributed, this result came as no surprise.

Looking at the leaving home equation, it appeared that gender and nationality were not statistically significant. The tendency to leave home decreased with age. As far as cultural and socio-economic background are concerned, income and parental education have been shown to play a role in determining the decision to leave home to attend higher education. Students in the higher income groups were more likely to stay at home, as were children of parents holding a higher education diploma.

Students who were more concerned with the leisure supply at the higher education location tended to leave home. As expected, whenever the institution location coincided with the district where the student's family lived, there was a high probability that the student stayed at home. Finally, working students appeared to be less mobile than non-working students.

We may now look more closely at the results of gender, income group, parents' education and the role of private institutions in accessibility, and discuss the predicted probabilities of choice for different groups of students according to those dimensions.

Table 3. Predicted probabilities by gender.

		Leaving home		
		Yes %	No %	Total %
Women				
Sector	University	25.3	27.1	52.4
	Polytechnic	29.9	17.7	47.6
Total		55.2	44.8	100.0
Men				
Sector	University	30.7	31.4	62.1
	Polytechnic	24.3	13.6	37.9
Total		55.0	45.0	100.0

Table 3 shows the predicted probabilities of the subsystem choice and leaving home decisions, for both men and women students. It suggests that the probability that a male student chose university education was almost 10 percentage points higher than their female counterpart.

A possible explanation for this result is the relation between gender differences in the choice of the field of study and the programme supply composition. Studies have recognised that there were gender differences in the choice of the field of study. In Portugal, polytechnic institutes and universities differ in their programme composition. For instance, in 2006, about 93% of the places available in the field of hard sciences were offered at universities, whereas in the field of education 62% of the vacancies were in polytechnic programmes.

Gender differences in the probability of being away from home were very small, although the chances of leaving home were marginally higher for women students. According to Higher Education Information System (2008), the proportion of women students living with parents was about 4 percentage points lower than for men. This study, as well as most of the previous studies reporting similar results, referred, however, to the whole higher education student population, rather than first-year students.

Analogous computations for each income group are shown in Table 4. According to Table 4, the likelihood of attending university increased with income. The difference in the probability of choosing a university between individuals in the highest and the lowest income groups was about 17 percentage points. A difference of about 24 percentage points, but with the opposite sign, was found regarding the probability of leaving home. A possible explanation for this is the one that established a link between individuals' education and their residential choices. Highly educated and high income individuals tend to live in the highly urbanised coastal areas, where most higher education institutions are located, as well as the best. Therefore, their adult children did not need to leave home to attend higher education.

Results for parental education followed the same direction as those obtained for family income (see Table 5). The probability of university attendance of the children of parents with a higher education diploma was about 66%, whereas it was about 52% for students whose parents had no higher education diploma. This might have to do with the type of institution attended by the parents themselves. Most of the parents of the students in this sample had a university diploma, since they studied at the latest in the early 1980s, when polytechnic institutes were starting their activity. However, we

Table 4. Predicted probabilities by income group.

		Leaving home		
		Yes %	No %	Total %
Income < €375				
Sector	University	30.0	16.9	46.9
	Polytechnic	40.7	12.4	53.1
Total		70.7	29.3	100.0
€375 ≤ income < €750				
Sector	University	27.5	21.3	48.8
	Polytechnic	35.9	15.3	51.2
Total		63.4	36.6	100.0
€750 ≤ income < €1125				
Sector	University	26.6	28.0	54.5
	Polytechnic	28.8	16.7	45.5
Total		55.3	44.7	100.0
€1125 ≤ income < €1500				
Sector	University	27.0	31.2	58.2
	Polytechnic	25.5	16.3	41.8
Total		52.5	47.5	100.0
Income ≥ €1500				
Sector	University	26.8	37.4	64.2
	Polytechnic	20.3	15.5	35.8
Total		47.1	52.9	100.0

Table 5. Predicted probabilities by parents' education.

		Leaving home		
		Yes %	No %	Total %
Parents with higher education diploma				
Sector	University	31.0	35.2	66.2
	Polytechnic	20.9	12.9	33.8
Total		51.8	48.2	100.0
Parents without higher education diploma				
Sector	University	26.0	26.4	52.4
	Polytechnic	30.5	17.1	47.6
Total		56.4	43.6	100.0

should be cautious when analysing the results related to both income and parents' higher education variables as those variables are correlated.

Finally, we predicted the probabilities of each choice by simulating a situation in which private higher education institutions of both types (universities and polytechnics) no longer existed. This would imply a change in accessibility measures such that accessibility would refer only to public higher education institutions. The results in Table 6 show that closing down private institutions would make university alternatives more likely. In such a hypothetical situation almost 70% of the students would

Table 6. Predicted probabilities if only public institutions exist.

No private institutions		Leaving home		
		Yes %	No %	Total %
Sector	University	35.0	34.3	69.3
	Polytechnic	20.1	10.6	30.7
Total		55.1	44.9	100.0

attend university and only 30% would opt for a polytechnic alternative. This would represent a considerable increase when compared to the actual proportion of university students in our working sub-sample of about 54% (Table 1).

Furthermore, about 55% of the students would leave their parental home. When we compared this proportion with the actual proportion of home leavers in our sub-sample (see Table 1), we realised that would correspond to an increase of about 1 percentage point. This meant that, even without private higher education institutions, students would be able to attend a higher education institution without leaving home. In other words, private higher education institutions were not driving the spatial distribution of the higher education supply. Most private institutions are located in cities/towns where public institutions already exist, and as such did not contribute to expanding the geographic accessibility of higher education.

Concluding remarks

In the present study, the higher education sector and living arrangement decisions have been simultaneously analysed. Results show that, although there were gender differences concerning sector choice, these were not significant when it comes to the decision about whether to live with parents.

High cultural and socio-economic background was associated with a higher probability of choosing university education, as well as with lower chances of leaving home. It is important to highlight that students from disadvantaged economic backgrounds appeared to be more constrained in their choices than other students. In pursuing its objective of giving low-income students the same options as their counterparts in choosing where to attend higher education, government should provide students with sufficient financial help to enable them to choose freely.

Accessibility to each type of higher education institution played a major role in determining student choices. Older and working students usually preferred polytechnic programmes and were less mobile. Students attracted by leisure activities preferred to leave home.

We are aware of some shortcomings of our study. Firstly, although the empirical approach accounted for a significant group of choice determinants, the choice process is not dealt with in all its complexities. Although we cannot claim that our empirical approach explored all choice dimensions, we can still argue that it provides a useful description of what is going on in terms of higher education choice. Secondly, we have treated the working decision as exogenous. It would be more accurate if the working decision was taken as being determined in conjunction with the subsystem and leaving home decisions. This option has been taken as no data was available to deal with it.

The present analysis can obviously be extended as the choice of the higher education subsystem does not exhaust the topic of higher education decisions. In a time of increasing access to higher education, differences in labour market outcomes among higher education graduates might be determined by study programme choice. Earning and unemployment differentials, and lack of workers in high-demand fields, call for an investigation of the choice of a field of study.

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