Determinants of Migration Choices: The Role of Beliefs about Pecuniary and Nonpecuniary Outcomes

Alaitz Ayarza-Astigarraga*
European University Institute

Job Market Paper

This Version: November, 2022. Latest Version HERE

Abstract

Why do young adults migrate? This paper studies the reasons behind migration choices of young, highly educated individuals from lagging-behind regions. I collect a rich dataset on subjective expectations at the time when respondents are making their choice of whether to migrate out of Andalusia, one of the poorest regions of Spain. I then use the data to estimate a life-cycle model of migration choice, taking migration duration into account. Crucially, the collected data allow me to separate preferences from beliefs and to distinguish between pecuniary and nonpecuniary factors. Regarding pecuniary factors, I find that migration decisions are more sensitive to earnings, followed by the prospects of full-time employment and a better match between studies and job. Although there is sorting on expected labor market outcomes, my results show that the set of nonpecuniary factors, such as being close to family and quality of social life, play a larger role in choosing whether to migrate. Given the large expected likelihood of short-term migration, I study the reasons for planning to migrate temporarily. Counterfactual exercises show that a human capital acquisition strategy plays a small role on the plan to migrate short-term. Instead, expected short-term migration is largely motivated by preferences for nonpecuniary outcomes.

*E-mail: alaitz.ayarza@eui.eu. I am indebted to my advisors Sule Alan and Michèle Belot, for their continuous guidance and support. I thank Jesús Bueren and Alessandro Tarozzi for their invaluable feedback. This work benefitted greatly from discussions with Alicia Adsera, Russell Cooper, Elisa Failache, Alessandro Ferrari, Dalila Figueiredo, Konuray Mutluer, Lukas Nord and Marina Sanchez del Villar. I also thank EUI seminar participants for helpful comments. I gratefully acknowledge financial support from the European University Institute's Early Stage Research Competitive fund, which allowed me to carry out the survey. I am also indebted to the Salvador de Madariaga EUI program for financial support as I wrote the paper. This study has been approved by the EUI Research Ethics Committe. Finally, I thank Seguridad Social for kindly providing the administrative data.

I Introduction

The first steps of young adults in the labor market are key to their long-term career prospects. There is growing evidence that the type of firms they sort into and the macroeconomic conditions they face at the start of their careers have lasting effects on their future earnings profiles.[1] To improve long-term career outcomes, young people born in regions with poor economic conditions can choose to start their professional careers elsewhere. Indeed, highly-educated young individuals often migrate out of economically distressed regions. Yet, many choose to stay behind. The factors that shape this population's migration choices are not well understood. Do migrants anticipate higher career returns than non-migrants? What are the expected nonpecuniary benefits of migrating and staying?

In this paper, I investigate the determinants of young adults' out-migration choices from relatively poor areas of advanced economies. To do so, I conduct a survey with 609 university students in a poor region of Spain (Andalusia) and collect their beliefs shortly before they finish their bachelor's degree. I collect expectations about the two set of factors determining migration choices: pecuniary and nonpecuniary outcomes.[2] Pecuniary outcomes include employment status, wage conditional on employment status and the quality of the match between the job and their bachelor's degree (i.e., study-job match).[3] Nonpecuniary factors include enjoying being close to family, partner and friends, and the quality of social life, where the latter captures young adults' broad attitude towards migration. I then estimate a life-cycle model of migration choice using these rich subjective expectations data. Given their estimated preferences, I analyze the way in which expected migration choices respond to counterfactual scenarios that vary in expectations about the benefits and costs of migrating.

A key challenge to investigate the determinants of migration decisions is the lack of data on the full choice set of agents when they are making their migration decisions. Using observed migration choices and realized outcomes (e.g., realized earnings) to identify the choice model necessitates assuming a belief formation rule about future choice-specific outcomes. Doing so requires strong assumptions about two complex issues: (i) the mapping between realized outcomes and beliefs about them; (ii) the sorting of individuals into

[1] See Arellano-Bover (2022) for the effect of firm size on future earnings, Müller and Neubäumer (2018) on unemployment and Schwandt and Von Wachter (2019) for the negative effect of entering the labor market in bad economic times.

[2] I use the terms pecuniary outcomes, labor market outcomes and career-related outcomes interchangeably.

[3] Collecting expected wages conditional on employment status on the one hand and employment status probabilities on the other, as in Wiswall and Zafar (2015), allows me circumvent the standard endogenous selection into employment issue where job characteristics are only observed for individuals who work.

migration choices.[4] Making inference on the decision-making process based on choice data and maintained assumptions on expectations is problematic since observed choices might be consistent with several combinations of expectations and preferences (e.g., Manski et al. (1993), Manski (2004)).

My contribution is to circumvent this identification problem by collecting data on individuals' subjective expectations under *each* migration alternative, as well as their expected choice probabilities over migration alternatives. The counterfactual alternatives include not migrating, migrating short-term (return migration) and migrating long-term. These alternatives are mutually exclusive and constitute the complete choice set. One needs to distinguish between individuals' intention to migrate short- and long-term, because the expected outcomes of migrating itself will differ between the two time horizons.[5] I collect data on the aforementioned expected pecuniary and nonpecuniary outcomes for each individual's chosen destination, which for the migrating options can be another region within the country of birth or another country. By combining expected choices and expectation under the counterfactual migration alternatives, I am able to estimate a life-cycle model without making strong assumptions on expectations.

I find considerable variation in students' beliefs across the different migration alternatives and a clear trade-off between labor market outcomes and nonpecuniary factors. The subjective belief data paint a sensible picture. 73% of students think that they would have the highest earnings over the life-cycle if they were to migrate long-term, which is consistent with migrating to improve the persistently poor labor market conditions in their region of birth. The data also show that students on average anticipate an earnings premium after return. 10 years after graduation, they expect to earn 19% higher earnings *in their region of birth*, Andalusia, if they have accumulated some working experience abroad (short-term migration) than if they always lived in their region of birth (no-migration). The data also reveal that students anticipate nonpecuniary outcomes to be affected by their migration choices. 90% of students expect a higher quality of social life at home than abroad, and they do not expect the gap to close as they accumulate years of life in their migration destinations.

I then combine subjective choice probabilities and subjective beliefs into a single coherent life-cycle model. The model includes expected earnings, expected study-job match prospects, expected enjoyment from being close to loved ones and expected enjoyment

[4]The researcher needs to assume random sorting or assume the characteristics in which the sorting is based in order to construct counterfactual outcomes for the alternatives not chosen by the individual.

[5]This will happen not only in the longer term, when individuals are living in different locations under each alternative, but can also happen while they live in the same migration destination, if they expect to behave differently depending on whether they plan to return back home or stay at the destination long-term (Dustmann and Görlach, 2016; Adda et al., 2022).

of quality of social life.[6] I find that all outcomes are statistically significant determinants of migration choices. In order to interpret their economic significance and compare results to other studies, I use the estimates of the model parameters to calculate elasticities of choice with regard to pecuniary outcomes and willingness-to-pay estimates for nonpecuniary outcomes.

I estimate an average elasticity of choice with respect to earnings equal to 0.80, which is higher but similar in magnitude to other recent studies that analyze migration in Spain using aggregate data and alternative identification strategies and populations (see Melguizo and Royuela (2020); Clemente et al. (2016)).[7] The elasticity of choice to changes in full-time employment probabilities is 0.68, which is closely followed by the elasticity of choice with respect to having good study-job match prospects. Choice responses to increases in part-time employment probabilities are much lower, consistent with young adults at the start of their professional careers seeking to work full-time. On the other hand, I estimate that students have a total willingness-to-pay equal to 74% of their life-cycle expected earnings (12,185€ annually) to increase each of the nonpecuniary factors from their expected levels in the long-term migration alternative to their expected levels in the no-migration alternative. This number is considerably lower than the moving costs estimated in other studies, which exceed 100% of income (e.g., Kennan and Walker (2011), Ransom (2022)).[8]

I then use the model parameter estimates to perform a series of counterfactual exercises. Because results above showed that both sets of outcomes are economically significant, the goal of the first two counterfactuals is to asses the role of pecuniary versus nonpecuniary outcomes on expected migration choices. The first counterfactual equalizes students' beliefs about labor market outcomes across the three migration alternatives. That is, it assumes that students believe their migration choices will not affect their professional careers. The second counterfactual equalizes students' beliefs about nonpecuniary factors across migration alternatives, assuming they expect nonpecuniary factors to be unaffected by their migration choices. Comparing the changes in expected choices driven by each counterfactual scenario provides a meaningful metric to assess the role of pecuniary versus nonpecuniary factors on expected migration choices. Results show that young adults are

[6] Expected earnings are calculated by averaging earnings conditional on employment status with employment status probabilities. Throughout the paper, expected earnings refer to these weighted earnings.

[7] The result is also comparable to the elasticity of the choice probabilities to changes in earnings found in other migration contexts, using other methodologies (e.g., Dahl and Sorenson (2010) find elasticities in the range of 0.5-1% for Danish engineers, and Bertoli et al. (2013) equal to 0.95% for migration choices from Ecuador to Spain).

[8] These studies estimate dynamic choice models and identify moving costs by assigning a distinct status to each person's birthplace. The discrepancy is likely due to a number of reasons. First, I am able to better identify the costs. Second, I estimate costs for individuals' chosen destinations relative to staying. Instead in their models, the moving cost represents the cost faced by the average individual if they were forced to move to an arbitrary location.

more responsive to nonpecuniary factors than to labor market outcomes: for example, if students believed that migrating did not affect their labor market outcomes, they would be 9 p.p. (25%) *more* likely to plan to stay. Instead, believing that they would enjoy the same nonpecuniary factors across alternatives would make them 14 p.p. (41%) *less* likely to plan to stay in their region of birth.

Finally, I do two counterfactual exercises to understand the drivers of planned short-term migration. Young adults in the sample expect short-term migration to be 40% more likely than long-term migration, a pattern observed in realized migrations of young adults from Andalusia to other Spanish regions. The counterfactuals manipulate beliefs in the periods in which in the short-term migration alternative students are back in their region of birth, after having migrated. The goal of the counterfactuals is to quantify the extent to which, given their preferences, young adults' plan to migrate short-term is motivated by (i) an anticipation of career benefits after return (i.e., short-term migration as a human capital acquisition strategy); (ii) low expected nonpecuniary factors under long-term migration. Results show that while both mechanisms exist, the second one plays a major role. I find that the choice of short-term migration would drop by 2 p.p. (4%) if individuals expected no career benefits after return. Instead, the choice of short-term migration would drop by 7 p.p. (17%) if expected nonpecuniary factors after return were equal to those expected in the long-term migration. This suggests that individuals' choice to return is more sensitive to nonpecuniary conditions at the migration destination (e.g., whether they make friends or find a partner at the destination) than to labor market conditions at home.

This is the first study that uses subjective expectations data to understand migration decisions under uncertainty. Previous migration studies have used subjective expectations data to asses the accuracy of individuals' expectations about actual realizations in the population, because systematic biases in beliefs can call for policy (information) interventions. These papers focus on migration from developing countries either using regular (e.g., McKenzie et al. (2013)) or irregular pathways (e.g., Bah and Batista (2020)), where information is scarce and particularly valuable.[9] This paper instead uses subjective expectations data to shed light on the determinants of migration choices, which has been traditionally answered using choice data.

The paper contributes to and builds on three strands of the literature. First, it belongs to the long tradition of work seeking to understand whether expected labor market outcomes influence migration choices (e.g., Tunali (2000), Dahl (2002), Kennan and Walker (2011), Grogger and Hanson (2011), Gibson and McKenzie (2011), Bertoli et al. (2013)).

[9]Other migration studies that use expectations data include Gibson and McKenzie (2011) and Adda et al. (2022)

This research has used choice data and has mostly studied the role of expected earnings. I complement this research by introducing a new methodology to the migration literature, which uses individual expectations under counterfactual scenarios. This approach allows me to study the role of a broader set of career-related outcomes on young adults' migration choices, other than earnings. Moreover, it allows me to circumvent the identification problem concerning the separation of preferences and beliefs, present in studies that use choice data.

The paper also builds on the more recent literature that unpacks the black box of migration costs by measuring the role of nonpecuniary factors on migration choices. Dahl and Sorenson (2010), Huttunen et al. (2018) and Büchel et al. (2020) use observational data to understand individuals' preference to move close to family, friends or to places where their broader networks are. Using stated preference approaches, Koşar et al. (2021) focus on measuring the preferences for different location characteristics (e.g., crime rate) and moving costs, and Gong et al. (2022) characterize the total value of nonpecuniary benefits. I complement this literature by quantifying the importance of nonpecuniary factors by incorporating expectations about these factors as well as expectations about labor market outcomes directly into the choice model. My approach allows one to learn about individuals expectations about nonpecuniary factors, which is interesting per se, and takes individuals' expected migration duration into account.

Finally, this paper adds to the growing literature that uses subjective-expectations data to understand decision-making under uncertainty. The methodology that I employ has mostly been used to study educational choices (Wiswall and Zafar, 2015; Boneva et al., 2022; Wiswall and Zafar, 2021) or occupational choices (Arcidiacono et al., 2020)[10]. It rests on the implicit assumption that the stated choices reported in the hypothetical scenarios are reflective of what respondents would do in actual scenarios. There is growing evidence that the stated approach yields meaningful responses when the counterfactual scenarios presented to respondents are realistic and relevant for them (Wiswall and Zafar, 2021). Given that the survey is carried out at the time of making migration decisions -when they are about to graduate in a region with high migration prevalence- I argue that this is the case in this study. In this regard, students' expected migration choices are consistent with actual self-selection patterns observed for migrants in Spain: being younger, male, from higher socioeconomic status and having higher grades are all statistically and positively

[10]Other studies on educational choices (Arcidiacono et al., 2012; Zafar, 2013; Attanasio and Kaufmann, 2014; Kaufmann, 2014; Stinebrickner and Stinebrickner, 2014; Attanasio and Kaufmann, 2017; Delavande and Zafar, 2019) and health choices (Delavande, 2008) also elicit beliefs in counterfactual scenarios, but elicit only the alternative that individuals are most likely to choose or a ranking of them. This approach cannot capture individuals' uncertainty at the time of the survey (Blass et al., 2010), which is important in my setting, as revealed by the results.

related to students' expected probability of migrating (González-Leonardo et al., 2022). I complement this literature by studying a new and relevant decision context, migration choices of young adults.

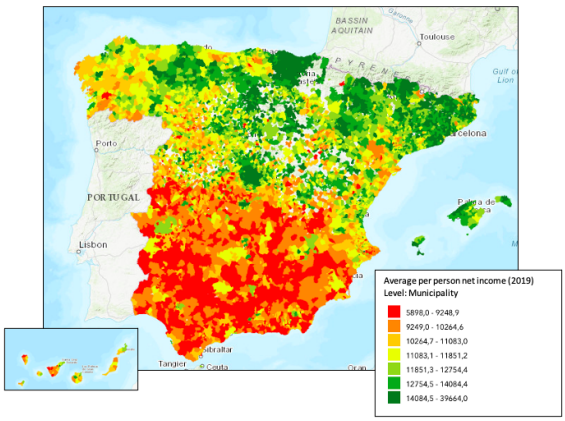
The rest of the paper is organized as follows. Section II shows migration patterns in Spain using administrative data. Section III outlines the model. Section IV explains how I collected the data and section V describes the collected beliefs. Section VI presents the life-cycle model's results and results from counterfactual exercises. Section VII concludes.

II Migration in Spain

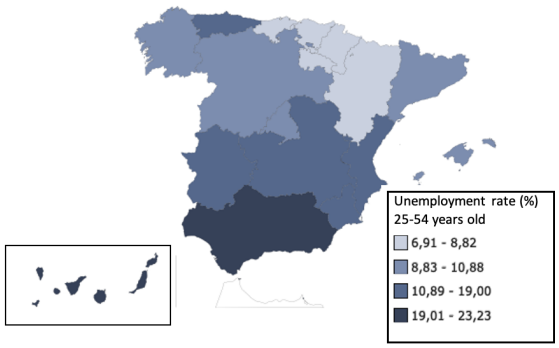
Spain has significant regional disparities in household income. While the Basque Country (in the north) is among the top 25% of OECD regions in terms of disposable household income, Andalusia (in the south) ranks in the bottom 30% (OECD, 2020b).[11] The south of Spain has been historically poorer, with persistently lower income and employment rates. To this day, per person net income in the south is about 60% of that in the center-north, and unemployment rates are around double (see Figure 1). The south is often represented by Andalusia, the southernmost and most populous region of Spain, with more than 8 million and a half inhabitants.

Figure 1: Regional inequality in Spain

(a) Per person net income by municipality (2019)



(b) Unemployment rate, 25-54 years old, 2019



Source: Spanish Statistics Institute (INE). Fig 1a: Experimental statistic, household income distribution. Fig 1b: Unemployment rate by age and region, averaged across all quarters in the year 2019.

The stark labor market differences across regions make migration from the south to the center-north a natural option to improve the material conditions of individuals born in

[11] Disposable income per capita in Andalusia was 12,579 USD and in the Basque Country 21,119 USD in the year 2018. OECD regional well-being index. https://www.oecdregionalwellbeing.org

the south. To set the stage for our analysis and motivate the survey design, I begin by documenting two stylized facts about south-north migration patterns at the start of individuals' careers using administrative data. First, I show that labor mobility is much more prevalent among individuals with tertiary education than their lower-educated counterparts. Second, I show that most migrations are temporary, with migrants returning home few years after having migrated.

I document these patterns using the Spanish Work History Sample (Muestra Continua de Vidas Laborales, MCVL), an administrative dataset with longitudinal information on individuals' work trajectories, and I track individuals within Spain from the date of first employment until the year 2019.[12] The sample is restricted to cohorts born between 1980 and 1984, the youngest cohort that can be followed over a long enough period of time in order to identify potential return moves (about 15 years since labor market entry).[13] I identify location changes by the location of the establishment where the individual is employed. Table 1 summarizes the results. It reports the fraction of stayers, short-term migrants and long-term migrants by educational category and region of birth, distinguishing among those who are born in Andalusia (the region of birth of all individuals in my survey), and for comparison, any other region in the south of Spain.[14]

The table shows that individuals with no tertiary education are 18% more likely to stay in the south than their more educated counterparts. This is driven by higher educated individuals being 1.5 times more likely to sort into short-term migration and 4 times more likely to sort into long-term migration. Despite the much higher likelihood of migrating long-term than their lower educated counterparts, the most likely form of migration is still short-term migration for individuals with a university degree (there are more than twice as many temporary migrants than there are long-term migrants in this group). These numbers are very similar whether we look at migration patterns of Andalusians or of individuals born in any other region in the south.

[12]The MCVL is obtained by matching social security, income tax, and census records for a %4 non-stratified random sample of the population who in a given year have any relationship with Spain's Social Security (individuals who are working, receiving unemployment benefits or receiving a pension). The data record all changes since the date of first employment or since 1980 for earlier entrants. The unit of observation is any change in an individual's labor market status or any variation in job characteristics.

[13]Results are quantitatively the same if we use older cohorts. 1970-1974; 1975-1979.

[14]Stayers are those who are never observed working outside Andalusia (or the south). Short-term migrants are those who work in a region in the center-north at some point but that are observed working back in Andalusia (or the south). Long-term migrants are those who are observed to start working in the center-north at some point and who are always observed in the north, until the panel is truncated. Southern Spain is composed of the regions of Andalusia, Extremadura, Canary Islands, Murcia, Castile-La Mancha, Valencian Community, and the autonomous cities of Ceuta and Melilla. All other regions -Galicia, Asturias, Cantabria, Castile and Leon, Community of Madrid, La Rioja, Basque Country, Aragon, Catalonia, and the Balearic Islands- comprise the center-north of Spain.

Table 1: Sorting into migration paths of cohorts born in any region in the south and the southern region of Andalusia between 1980-1984, by level of education.

	No tertiary education		Tertiary education	
	Andalusia (1a)	Any, south (1b)	Andalusia (2a)	Any, south (2b)
Stayers (%)	84.29	83.78	71.32	70.74
Short-term migrants (%)	13.6	13.86	20.05	21.2
Long-term migrants (%)	2.11	2.36	8.64	8.05
N	11,969	29,963	3,231	10,206

Note: Data from the Spanish Work History Sample, waves 2006-2019. The sample is restricted to individuals born born between 1980-1984. Migration moves are identified by the location of the establishment where the individual works. Only first out-moves and first return moves are identified. Individuals are followed from their first employment until the year 2019. Columns 1a and 2a refer to individuals who are born and start working in Andalusia. Columns (2a) and (2b) are individuals who are born and start working in the south of Spain.

Table A.1 reports the average age of labor market entry, the age at which the move to the center-north takes place and the number of months spent in the north for each of the migrant groups with tertiary education described in Table 1. On average, short-term migrants move to the north when they are 26 years old and stay in the north for almost 4 years, before returning back to the south.[15] Overall, results show that migration, and in particular short-term migration, is not a rare event among university graduates born in the south of Spain.

III Conceptual Framework

This section develops a simple model of migration choice at the beginning of individuals' labor market careers. The sampling strategy accounts for the fact that migrating to work and migrating to undertake education are often interrelated -migrants may obtain further qualifications outside their region of birth as a pathway to working abroad. However, migration alternatives are defined for the periods in which individuals are in the labor market, after having finished the expected maximum level of studies, regardless of the place where these were finished. The model's flexibility is based on the data I collect, which is described in detail in Section V.

[15]This is the average length of stay in the north for temporary migrants who stay one year or longer in the north. As in De la Roca (2017), I distinguish between short-term migrants that move for one year or longer and those who move for less than one year. Migrants who stay less than one year stay on average, for 4.8 months in the north. They do many back and forth moves between the south and the north and they are more likely to move to an establishment that belongs to the same firm in which they are working in the south.

III.1 Intended migration alternative

After finishing her maximum level of studies, individual i at time t_0 considers different migration alternatives that she could follow from t_0 to T, where T is equal to 10 years after finishing the bachelor's degree. The complete migration choice set is summarized in the following three alternatives:

> ***No-migration,*** $m = 1$*: Always work in her region of birth.*
> ***Short-term migration,*** $m = 2$*: Work outside for some time but return to her region of birth to work before period T.*
> ***Long-term migration,*** $m = 3$*: Work outside for some time and NOT return to her region of birth to work before period T.*

After comparing how each migration alternative is expected to affect several relevant pecuniary and nonpecuniary factors from t_0 to T, student i at time t_0 intends to follow the migration alternative that maximizes her expected utility. Student i weights the trade-offs of the different alternatives at her own chosen migration destination, *"the destination where she thinks she would migrate if she were to migrate"*.

The wording of the survey emphasized that they should consider feasible migration destinations. Students chose their migration destinations as follows: after eliciting their subjective probability of choosing counterfactual migration alternatives and before presenting the questions about expected outcomes conditional on each migration alternative, students could choose between moving to [*another Spanish region*/*another country*]. If they chose another Spanish region, they were further asked about which province, and if they chose another country, which continent [*Europe* (*excluding Spain*)/*North America*/*South America*/*Africa*/*Asia*/*Oceania*]. The purpose of asking about the potential migration destination was to help students more consistently envision their future experience (as in Boneva et al. (2022)). During the survey, they were emphasized that they should imagine living in their reported migration locations. Note that by asking about one single migration destination, the framework effectively assumes that students choose the same destination if they migrate short-term and long-term. While this might be a strong assumption, the reason for reducing the choice to a single location was twofold. First, to reduce the risk of experimenter demand, as asking for more than one potential destination could make them think about destinations they had never thought about before. Second, to reduce the cognitive

load required to elicit expected outcomes in different locations.[16]

III.2 Timing of belief elicitation

Beliefs are elicited at time τ when individual i is still a student about to finish her undergraduate degree in her region of birth. Given that students have not incurred any migration cost yet (they are pursuing their bachelor's degree in their region of birth) this sampling strategy minimizes the risk of students' reported beliefs being biased, say, due to cognitive dissonance or ex-post rationalization (Festinger, 1957). This sampling strategy also avoids the sample selection bias that would likely arise if we focused on individuals studying higher levels education in their birthplace, which would over-represent those who are more likely to not migrate.[17]

Eliciting the probability of following each counterfactual alternative (as opposed to stated preference data on the intended migration alternative) allows us to capture the fact that some uncertainty will be resolved on the value of the alternatives between the time in which the beliefs are elicited at time τ and agents choose their intended migration alternative at time t_0. The subjective expected utilities of migration alternative m at times τ and t_0 are linked through the following relationship:

$$\mathbb{E}[U_{im}|\,\mathcal{I}_{it_0}] = \mathbb{E}[U_{im}|\,\mathcal{I}_{i\tau}] + \xi_{im\tau} \tag{1}$$

where $\mathbb{E}[.|]$ is the subjective-expectation operator, U_{im} is individual i's utility from migration alternative m and $I_{i\tau}$ and I_{it_0} are individual i's information sets at time τ and t_0 respectively. We denote as $\xi_{im\tau}$ the uncertainty to be resolved for migration alternative m when beliefs are captured at time τ (which Blass et al. (2010) refer to as "resolvable uncertainty"). The $\xi_{im\tau}$ term represents a preference shock that is assumed to be realized after students report their likelihood of choosing each migration alternative and before they actually make the migration choice. It reflects any unanticipated change in the utility of a migration alternative that occurs between τ and t_0. Thus, it allows accounting for switch-

[16]The framework also assumes that under long-term migration, students plan to stay in their migration destination throughout (at least until 10 years after finishing the bachelor's degree). That is, it rules out the possibility of *planned* onward migration, i.e., moving from one migration destination to a new one, different from their region of birth. This does not seem a strong assumption, as it would require students to have a *plan* of moving to different migration locations before ever having migrated. Note that the framework still allows students to plan pursuing further studies in one place outside their region of birth and plan to migrate to work to a second, different location.

[17]Note that the fraction of students enrolled in a bachelor's degree in a region other than their region of birth is very low in Spain (14% on average, in the academic year 2016/17) and due to its large population size, and consequently, large degree supply, it is particularly low in Andalusia (8% in 2016/17). The mobility to study a master's degree, however, triples. The percent of students that pursue their master's degrees outside their region of birth is 23.4% for those born Andalusia and 26.7% on average in Spain (FundaciónBBVA, 2018).

ing migration alternatives through some implicit, unspecified learning process between the two time periods.

Note that the subjective expected utility from migration alternative m elicited at time τ, $\mathbb{E}[U_{im}|\mathcal{I}_{i\tau}]$, accounts for anticipated utility changes resulting from actions that students plan to undertake between τ and t_0. The most obvious of these actions is students' education plan after finishing their bachelor's degree. Before eliciting beliefs about the different pecuniary and nonpecuniary outcomes along the migration alternative, students were asked about their expected highest level of education [*bachelor's degree*/*other type of further studies*/*master's degree*/*Ph.D.*] and the location [*Andalusia*/*other Spanish region*/*other country*] where they planned to pursue such studies. As for the elicitation of migration destinations, if they chose another Spanish region, they were further asked about the province where they would move to and if they chose another country, they needed to select the continent [*Europe* (*excluding Spain*)/*North America*/*South America*/*Africa*/*Asia*/*Oceania*]. Individuals were instructed to consider in their response that they followed their reported study plans and therefore, the expected utility from migration alternative m at time τ, $\mathbb{E}[U_{im}|\mathcal{I}_{i\tau}]$, incorporates how students expect their study choices prior to t_0 to affect the utility of each migration alternative. Because future study and migration choices are assumed to be sequential in time, each student evaluates the trade-offs from the three counterfactual migration alternatives under the same study plan.

III.3 Expected utility by migration alternative

At time τ, student i possesses a distribution of beliefs $G_{i,\tau}(x|m.t)$ about the probability of the vector of future outcomes $x \in X$ occurring in all future periods $t \geq t_{i0}$ *if* she were to choose migration alternative m. We allow the start period of the labor mobility alternative t_0 to vary across individuals by their expected maximum level of education. Student i's subjective expected utility from migration alternative m at time τ is given by

$$\mathbb{E}[U_{im}|\mathcal{I}_{i\tau}] = \sum_{t=t_{i0}}^{T} \beta^{t+g_i} \int_{x\in X} u(x) dG_{i\tau}(x|m,t) \tag{2}$$

where $t_{i0} \in \{0,1,2,3\}$. We set $t_{i0} = 0$ if student i does not plan to pursue further studies after finishing the bachelor's degree and $t_{i0} = 1$, $t_{i0} = 2$, $t_{i0} = 3$ if they plan to pursue other type of studies, a master's degree and a PhD respectively. This specification reflects that the migration alternative of students who plan to pursue further studies is shorter in length and starts farther in time relative to students who plan to enter the labor market right after finishing their bachelor's degree. $g_i = \{0,1,2,3\}$ is the student i's years until

graduation, with $g_i = 3$ if the student is a freshman, $g_i = 2$ (sophomore), $g_i = 3$ (junior) and $g_i = 0$ (senior). $\beta \in (0, 1)$ is the discount rate. $u(x)$ is the migration alternative's utility function that provides the mapping from the finite vector of outcomes x to utility. A key feature of the model is that when choosing the intended migration alternative m at time t_0, the student faces uncertainty about the labor market outcomes and nonpecuniary factors over the life-cycle. For tractability, we assume that the utility function is additively separable in pecuniary and nonpecuniary attributes.

$$\begin{aligned}\mathbb{E}[U_{im}|\mathcal{I}_\tau] = \sum_{t=t_{i0}}^{T} \beta^{t+g_i} \Big[\phi_1 \sum_{l=FT,PT} P_{imt}(L=l) * \mathbb{E}(w_{q,imt}|L=l) + \phi_2 P_{imt}(\text{Study-Job Match})\Big] \\ + \sum_{t=t_{i0}}^{T} \beta^{t+g_i} \Big[\phi_3 P_{imt}(\text{Enjoy social life}) + \phi_4 P_{imt}(\text{Enjoy being close})\Big] + \gamma_m\end{aligned} \tag{3}$$

where $\sum_{l=FT,PT} P_{imt}(L=l) * \mathbb{E}(w_{q,imt}|L=l)$ are expected earnings, that is, expected earnings conditional on employment status averaged by expected employment status. $P_{imt}(L = l)$, where $l = \{FT, PT\}$, is student i's expected probability of working full-time and part-time in migration alternative m at time t and $\mathbb{E}(w_{q,imt}|L=l)$ is students i's expected minimum (maximum) yearly gross earnings in migration alternative m at time t conditional on employment status l, where $q \in \{min, max\}$. Following Wiswall and Zafar (2015), the survey asked respondents for their potential earnings if they were working full-time and asked their beliefs about the probability of working full-time, part-time, being out of the labor market, and being unemployed as a separate question. Collecting expected wages conditional on employment status on the one hand and employment status probabilities on the other allows me to circumvent the standard endogenous selection into employment issue where job characteristics are only observed for individuals who work. The utility model specification assumes that students value expected earnings, which can operate through the earnings offered if employed or the employment status probabilities. Some students, for example, could think that conditional on getting a job, wage differences would not be big between their chosen migration destination and home, but that the chances of getting a job are much lower in Andalusia. Because the survey asked about full-time equivalent wages only, I assume that students' expected wages if working part-time are half of those if working full-time. I also assume that students have no monetary compensation when unemployed or out of the labor market.[18] I specify two different utility functions, one in

[18]This pulls the probability of being unemployed and out of the labor market together. The probability of the latter is tiny in all the three alternatives, as shown in section V.

which students care about the potential wages' lower bounds, w_{min}, and another one in which migration decisions are driven by the highest earnings that they could think of having, w_{max}. P_{imt}(Study-Job Match) is student i's expected probability of having a job that is directly related to her bachelor's degree at time t in migration alternative m, conditional on being employed. Expected earnings and study-job match make up the pecuniary or career-related outcomes that students value in a migration alternative, and ϕ_1 and ϕ_2 are the utility values from the discounted expected lifetime values of these outcomes.

The set of nonpecuniary outcomes that students consider when choosing an alternative is formed of P_{imt}(Enjoy social life) and P_{imt}(Enjoy being close), which stand for student i's expected probabilities of enjoying the quality of their social life and enjoying being close to family members, partner and friends at time t under migration alternative m. Absent direct measures on respondents' beliefs about social life outcomes, researchers typically introduce a "home-bias" in the utility specification, understood as a utility cost of living away from one's birthplace.[19] With direct individual measures, I let each student in the sample express whether they perceive a decrease or an increase in the probability of enjoying the quality of their social life or in the probability of enjoying being close to loved ones when moving abroad. This flexible specification allows individuals to perceive, for example, no trade-off between gains in pecuniary outcomes and quality of social life if they were to migrate to their chosen destination instead of staying in their birth region. Similarly, the specification accounts for the fact that some students can enjoy being close to their loved ones not only if they stay in their region of birth but also if they choose to move to a destination where their loved ones are already living, which is plausible in places with high migration prevalence if new migrants follow previous movers. ϕ_3 and ϕ_4 are the utility values from the discounted expected lifetime value of these two nonpecuniary factors. γ_m captures choice-specific unobservable factors that affect lifetime utility. Our goal is to estimate the parameter vector $\Theta = \{\{\phi_j\}_{j=1}^4, \gamma_m\}$ up to scale.

IV Data

The data is from two original online surveys administered to undergraduate students at the University of Seville (US) and the University of Granada (UGR) over 3 weeks during June 2020. The UGR and the US are two large, public universities that rank highest among Andalusian universities.[20] The region is divided into 8 provinces and has 11 universities, 10 public and 1 private. Every province except the province of Seville - which has 4 uni-

[19] See for example, (Kennan and Walker, 2011; Ransom, 2022), Zerecero (2022)

[20] For example, in the QS World University Ranking, which compares the world's top 800 universities, the UGR and the US score between 511-520 and US 601-650, respectively. At the same time, the other 9 are not included in this list.

versities, 3 public and 1 private- has one single university, public and located in the capital city of the province. The UGR is located in Granada - the capital city of the province of Granada - and the US is located in Seville - both the capital city of the province of Seville and of Andalusia-. Map A.1 shows the location of the two universities.

The methodology of using strategically-designed survey questions to understand individuals' decision-making under uncertainty rests on the implicit assumption that individuals have well-formed expectations about the outcomes conditional on the migration choice that they are being asked about. This does not mean their beliefs need to be correct. This means that the questions they are being asked about are familiar to them. Thus, it is essential to ask the questions at a time when students are actively thinking about their migration choices. For this reason, the study was limited to students who were close to finishing their degree[21]. In addition, the surveys were administered just before the end of the academic year (the end of June in Spain). Finally, the study was also restricted to students born in Andalusia. Using administrative data, Section II has shown that internal migration out of Andalusia is prevalent. To get a sense of students' exposure to migration, the survey asked whether they had older siblings working, and if they did, asked the location where they were working. Table A.2 in the Appendix shows that students in the sample are exposed to migration. Of students who had elder siblings working, 67% reported that their siblings were employed in Andalusia, and the rest, 33%, had siblings working outside their region of birth. Among these, 18% of the students had at least one sibling working in another Spanish region and 15% in another country. Siblings are just one channel through which students are exposed to migration experiences. However, these high numbers provide further evidence that migration is commonplace and that thinking about the counterfactual outcomes under different migration alternatives is something that students with tertiary education can relate to. Finally, the study was limited to Social Science and Law, Engineering and Architecture, and Natural Science. Table A.3 in the Appendix reports the list of degrees that participated in the survey. The fields of Health Science and Arts and Humanities were excluded from the survey because many of these students end up working in the public sector (as doctors or teachers, for example) for which they undertake further competitive exams, and whose results often determine students' future geographic locations.

IV.1 Administration and sample selection

The two surveys were designed using Qualtrics Survey software, and students received the online survey links via email two days apart. The universities sent the first survey dir-

[21] The specific restriction was to be enrolled in at least one subject offered in the last year of their degree.

ectly through their official communication channel. They sent 5,296 emails, and the take-up rate was 18%. This survey collected students' individual and family characteristics, as well as their contact information. Due to budget constraints, the link to the first survey remained open for only 12 hours, and the survey took approximately 7 minutes (median) to complete. At the end, it included a game with probabilistic payoffs that encouraged participation. One of the questions included in the first survey was whether they were born in Andalusia. Students were told that finishing the first survey was necessary but not sufficient to be invited to the second survey and were not told the condition for being invited. Only students born in Andalusia were invited to participate in the second survey, 688 of them.[22] The second survey took approximately 25 (median) minutes to complete, and students were compensated with 6€ for successfully completing it. 90% of the invited students completed the follow-up survey. Students were given one week to start the survey before the link became inactive and were told to complete the survey in one sitting. Halfway through the week, students who had not completed the survey were sent a reminder. The second survey collected all remaining data: students' study plans, expected migration choices, and students' beliefs under the counterfactual migration alternatives. As they were promised, payments for both surveys were transferred within the next 72 hours of completion using a prevalent online payment platform in Spain (Bizum).[23] Section A.1 in the Appendix describes the surveys' administration and sample selection in more detail.

IV.2 Sample Characteristics

The final sample consists of 609 individuals. Table 2 shows the sample's descriptive statistics. It also shows how students in the sample relate, in terms of educational characteristics, to the population of students studying the same degrees in the same departments and, in terms of family background characteristics, to the population of Andalusian university students. Results in Table 2 show that the fraction of females, the mean age at degree completion, and the average GPA in my sample are very similar to the ones in the population of students enrolled in the last year of equivalent degrees, i.e., 46% vs. 48% of females, 23 vs. 24 years old, and 6.82 vs. 6.9 GPA in my sample relative to the administrative data respectively. The administrative data come from the Spanish Ministry of Universities and

[22] Given they were asked many individual and family characteristics, it would be tough for them to know the rule by which they were invited.

[23] Bizum is a highly popular instant and commission free phone to phone payment system that was launched by Spanish banks in 2016. It is used by friends, colleagues or family members to make small instant payments. All what is needed to receive money is a bank account, the Bizum app - which was offered by 96% of all Spanish banks in 2020- and a phone number. The sender only needs to know the phone number to make the money transfer.

are publicly available.[24]

Table 2: Sample characteristics and comparison to other data sources

	My sample		University and LFS data
	Mean (s.d.)	N	Mean
Last Year (%)	81	609	
Field of Study (%)			
- Natural Science	8	609	
- Social Science & Law	63	609	
- Engineering & Architecture	29	609	
Female (%)	46	609	48
Age at survey completion	23.09 (2.23)	609	
Expected age at end of bachelor's degree	23.30 (2.27)	609	24
GPA, 0-10 scale	6.82 (0.84)	534	6.9
High SES (%)	49	601	46
Parents' employment status (%)			
- Both parents working	50	609	38
- One parent working	38	609	46
- Both parents unemployed	2	609	1
- One parent unemployed	16	609	14
Perceived family wealth w.r.t. the average family in Andalusia (%)			
- Higher or much higher	30	600	
- Similar	56	600	
- Lower or much lower	14	600	

Note: Last year refers to the fraction of students enrolled in their last year of the bachelor's degree. Students are categorized as high socioeconomic status (SES) if at least one of their parents attended university, and low-ses otherwise.

The survey also collected data on students' family background. In particular, about parents' highest level of education, employment status, and perceived family wealth relative to the average family in Andalusia. 49% of students in the sample have high socioeconomic status (defined as having at least one parent with a university degree), 50% have both of their parents working, 16% have one of their parents unemployed, and 30% think that their family wealth is higher than the wealth of the Andalusian average family. To

[24]See link for individual characteristics this other link for grades by university and degree.

assess how my sample's students' household characteristics relate to families who have children attending university in Andalusia, I use the Spanish Labor Force Survey (LFS), year 2019. I define a comparable family as one that (i) is living in Andalusia and (ii) has at least one child born in Andalusia and attending university in 2019. Overall, the results show that the family characteristics of students in the sample are similar to those of Andalusian families that have children attending university that year. For example, 46% of these families have a high socioeconomic status. As expected, our highly-educated potential migrants are from more advantaged backgrounds than Andalusian counterparts of similar age, unconditional on education: LFS results show that only 30% of the families with university-attending-age children (20-25 years old) have a high socioeconomic status in the region.

V Description of Beliefs

This section describes students' migration plans and the subjective expectations data.

V.1 Expected migration choices

Students were asked to imagine their life in terms of geographic labor mobility from the moment they finished their bachelor's degree until 10 years after. Then, they were asked to report the subjective probability of choosing each counterfactual migration alternative as defined in Section III.1. The choice probabilities across the three alternatives sum up to 100, comprising the complete migration choice set from t_0 to $T = 10$. Table 3 reports the distribution of students' reported subjective choice probabilities for each migration alternative (Figure A.2 plots the kernel density distributions).

Table 3: Subjective choice probabilities, (%)

	No-migration	Short-term migration	Long-term migration
Mean	36.5	36.7	26.7
Sd	27.2	20	21.2
10th percentile	5	10	5
25th percentile	10	20	10
50th percentile	30	35	20
75th percentile	55	50	40
90th percentile	80	60	55

Results show that students on average view migrating temporarily as likely as staying in

their birthplace, while following a long-term migration alternative is viewed as much less likely. Students at this stage are uncertain about their future migration choices, highlighting the benefit of using stated-probability choices as opposed to stated choices (Blass et al., 2010). Results also show that the distribution of choice probabilities is different across alternatives: short-term migration follows a symmetric distribution, while the no-migration and long-term migration alternatives are right skewed.

V.2 Expectations about future earnings, employment status and study-job match

Next, I describe students' subjective expectations about labor market outcomes under each migration alternative. Due to time and respondent burden considerations, one cannot ask respondents to report their beliefs for every year of the migration alternative. Instead, the survey asked these beliefs for two future points in time -3 and 10 years after finishing the bachelor's degree. The survey instructed students to assume that by $t = 3$, they had finished all their studies and were already living at their chosen migration destination (in the short-term and long-term migration alternatives). Section A.2 in the appendix shows the individual-specific migration alternatives that students were described. These are just the alternatives defined in section III.1, but where each student is described the alternative with her own chosen migration destination, in order to make the expectations easier to report. Section A.3 reports the migration destinations chosen by students in the sample and, using administrative data, shows that these locations are in line with the actual destinations that young adults from Andalusia choose to move to. Consider a student who chose Madrid (the capital city of Spain) as migration destination. Then, after describing her individual-specific alternatives, expectations about all labor market outcomes were collected in tables such as the one below

Table 4

	3 years after	10 years after
$m = 1$: Andalusia - Andalusia	—	—
$m = 2$: [Madrid] - Andalusia	—	—
$m = 3$: [Madrid] - [Madrid]	—	—

This table lets students easily compare expected outcomes at each period in time across alternatives taking the *complete location sequences* that comprise each alternative into account. By eliciting beliefs in this manner, we can construct measures of interest that are typically not observed. For example, we can directly construct, with no parametric assumptions and taking the beliefs of *all* individuals into account, regardless of their sorting plans, the

expected wage premium after return. This is the wage difference that students expect 10 years after graduation when they are living in Andalusia, their region of birth, after having accumulated some working experience by working in Madrid relative to expected earnings if they have always worked in Andalusia. This is therefore a direct measure of whether young adults view temporary migration as a human capital acquisition strategy. The individual-specific expected wage premium after return is computed as:

$$\delta_{i,m_2,t_{10}} = \frac{\mathbb{E}(w_i|m=2,t=10) - \mathbb{E}(w_i|m=1,t=10)}{\mathbb{E}(w_i|m=1,t=10)}$$

The remaining expected wage premia are computed in a similar manner. $\delta_{i,m_3,t_{10}}$ is the expected percent wage difference 10 years after graduation, if the student is living in Madrid and has been living there for at least 8 years, as opposed to if she is living in Andalusia and has always lived there. δ_{i,m_2,t_3} and δ_{i,m_3,t_3} are the short-term premium i.e., 3 years after graduation, of short-term (temporary) and long-term migration, respectively, relative to no-migration. δ_{i,m_2,t_3} and δ_{i,m_3,t_3} will differ if students expect to have a different behavior when they arrive to their migration destination (e.g., make different job search effort, sort into different occupations) depending on whether they plan to return back home or stay in the migration destination for a long-term. [25]

This section describes students' beliefs about earnings, employment status and study-job match prospects 3 and 10 years after graduation by migration alternative (as in Table 4). Note that to elicit these beliefs, students were told to think about jobs that they thought they would be offered and that they would accept (as done in previous surveys that elicit this type of questions (Jensen, 2010; Wiswall and Zafar, 2015)). The section also reports expected premia for different outcomes and future points in time as described above. The distributions of these expected premia and the tables reporting the different moments of the distributions are reported in Appendix.

Expected monthly minimum and maximum gross earnings if working full-time: Students were asked about the expected minimum and maximum monthly gross earnings *if* working full-time, and they were asked about the probability that they would be working full-time as a separate question. This allows to elicit beliefs about all outcomes to every individual. Students were asked about monthly -rather than annual- earnings because individuals, especially those who do not have a work contract yet, are most used to re-

[25] In practice, more than at arrival, the consequences of a different behavior would be more likely to emerge in the longer term, for which one would have to elicit beliefs for more than one future point in time at the migration destination. Adda et al. (2022) document that migrants who plan to stay longer at the destination invest more into skill acquisition than those who plan to return, which affects the career paths of the two groups at their migration destination.

ferring to wages on a monthly basis in Spain. When I refer to annual wages, these are monthly wages multiplied by 12. Table 5 shows the moments of the distribution of expected monthly minimum and maximum gross earnings 3 and 10 years after graduation from the bachelor's degree by migration alternative.

Table 5: Sample distribution of expected monthly gross earnings, in €, if working full-time

		No-migration (1)		Short-term m. (2)		Long-term m. (3)	
		Min.	Max.	Min.	Max.	Min.	Max.
Panel A	3 years after						
	Mean	1,122	2,055	1,429	2,533	1,461	2,608
	First Quartile	900	1,300	1,000	1,500	1,000	1,500
	Median	1,000	1,600	1,200	2,000	1,300	2,000
	Third Quartile	1,200	2,300	1,700	3,000	1,800	3,000
	Standard Deviation	596	2,371	955	2,915	960	2,912
Panel B	10 years after						
	Mean	1,743	3,498	1,982	3,807	2,336	4,418
	First Quartile	1,200	2,000	1,300	2,000	1,500	2,500
	Median	1,500	2,500	1,700	3,000	2,000	3,100
	Third Quartile	2,000	3,500	2,300	4,000	2,500	5,000
	Standard Deviation	1,137	4,536	1,591	4,651	2,478	4,915

Panel A shows that three years after graduation, the mean of the expected minimum gross earnings if working full-time is 1,122€ if they stayed in their region of birth and 1,429€ and 1,461€ if they migrated to the place of their choice with the intention to return and to stay for a longer term, respectively. Students' expected maximum earnings follow the same pattern as minimum earnings. Its value is lowest for the no-migration alternative, 2,055€, and higher for the short-term and long-term migration alternatives (equal to 2,533€ and 2,608€ respectively). Students' expected earnings range (difference between minimum and maximum expected earnings) is smallest in their region of birth, and the low variance in the distribution of expected minimum earnings is remarkable. In particular, the median student believes that the minimum wage she would be working at in her region of birth is 1000€, close to the 900€ minimum wage set in Spain at the time of the survey. Figure A.3 shows the probability density functions of expected minimum earnings 3 and 10 years after finishing the bachelor's degree, and figure A.4 the kernel densities of the minimum earnings premia from choosing short-term and long-term migration alternatives relative to the no-migration alternative. This figure shows that the long-term migration premium is shifted to the right, both 3 and 10 years after finishing the bachelor's degree.

That is, students think that at the beginning of their career, in the migration destination, they would earn higher full-time wages if they were to stay for the long-term instead of the short-term. The difference between the two, however, is not economically significant. The average expected minimum earnings premia across individuals are equal to 29% and 32% from short-term and long-term migration, respectively, and both are statistically significantly different from zero at 1% levels. That is, students believe that their earnings potential would have a sizeable increase 3 years after if they were to migrate both short-term and long-term. This results are reported in Panel A of table A.4.

Panel B in table 5 shows the same moments of the full-time earnings distributions, for 10 years after graduation. The mean of the expected minimum earnings if working full-time in their region of birth is 1,743€ and 1,982€ if they had never left the region and if they returned after having migrated temporarily respectively. This shows that students, on average, do anticipate a wage premium after return. The average expected premium, reported in table A.4, is 13%. The high spike around zero that shows the kernel density of this premium (figure A.4), however, reveals that many students expect no gains to having migrated (indeed, 40% of students expect exactly zero gains in full-time earnings and almost 10% expect negative returns, Figure A.5). Unsurprisingly, students expect their earnings potential to be highest 10 years after finishing the bachelor's degree if they were to migrate long-term, expecting their minimum earnings if working full-time to be, on average, 2,336€ a month. The expected average full-time earnings premium from long-term migration 10 years after is equal to 31%. This average premium is statistically significantly different (at 1% level) from the average premium that students expect from short-term migration 10 years after.

Expected employment status: The survey asked students about their expected probability of working full-time, working part-time, being unemployed and being out of the labor market 3 and 10 years after finishing the bachelor's degree if they were to follow each counterfactual migration alternative. Table 6 reports the mean, median and standard deviation of the responses to this question. Results show a rather pessimistic view on their employment opportunities. The average student believes that 3 years after finishing the bachelor's degree she has a 49% chance of working full-time and 28% and 17% chances of working part-time and being unemployed if she were to stay in her region of birth. Students expect higher chances of working full-time and lower chances of being unemployed if they were to migrate, while they expect their migration choices to have little effect on the probability of working part-time and being out of the labor market. Panels B, C and D of table A.4 report the employment status premia. The short-term and long-term migration premia of working full-time and being unemployed 3 years after show that on average students believe migrating short-term will increase their chances of working full-time by

almost 47% and will decrease chances of being unemployed by 28% (both statistically significantly different from zero at 1% level). Results are similar for long-term migration. Over time, students expect their chances of being employed full-time to increase and the chances of working part-time and being unemployed to decrease in all migration alternatives. Students on average believe that the migration experience accumulated abroad will be of less help for getting a full-time job back at return in their home region. Finally, 10 years after finishing the bachelor's degree, students expect 13% higher chances of working full-time if they followed the long-term migration alternative than if they never migrated (statistically significantly different from zero at 1% level).

Table 6: Labor supply and study-job match beliefs 3 and 10 years after finishing the bachelor's degree by migration alternative

	Employment Status								Study-Job match	
	Work F.T.		Work P.T.		Unemployed		Out of lbr mkt			
	3 y.a.	10 y.a.	3 y.a.	10 y.a	3 y.a.	10 y.a	3 y.a.	10 y.a	3 y.a.	10 y.a
No-migration	0.49	0.70	0.28	0.18	0.17	0.08	0.06	0.04	0.55	0.74
	[0.50]	[0.70]	[0.30]	[0.15]	[0.15]	[0.05]	[0.00]	[0.00]	[0.50]	[0.80]
	(0.26)	(0.22)	(0.17)	(0.15)	(0.16)	(0.10)	(0.09)	(0.08)	(0.26)	(0.22)
Short-term m.	0.59	0.71	0.26	0.19	0.11	0.08	0.04	0.03	0.64	0.76
	[0.60]	[0.75]	[0.25]	[0.17]	[0.10]	[0.05]	[0.00]	[0.00]	[0.60]	[0.80]
	(0.26)	(0.23)	(0.18)	(0.16)	(0.11)	(0.11)	(0.08)	(0.07)	(0.24)	(0.21)
Long-term m.	0.59	0.74	0.26	0.18	0.10	0.06	0.04	0.02	0.65	0.79
	[0.60]	[0.80]	[0.25]	[0.14]	[0.10]	[0.03]	[0.00]	[0.00]	[0.70]	[0.85]
	(0.27)	(0.22)	(0.19)	(0.17)	(0.12)	(0.08)	(0.08)	(0.06)	(0.24)	(0.21)

Medians in brackets and standard deviations in parenthesis.

Expected study-job match: Young individuals in the sample have studies in the fields of Social Science and Law, Engineering and Architecture and Natural Science. Andalusia, on the other hand, is the Spanish region with the highest negative gap between high-skilled employment and total employment as a share of national employment OECD (2020a). While this is largely the result of the level of education of its inhabitants, it is likely that due to the productive activity of the region many young skilled individuals seek to improve their study-job match prospects by migrating. The survey asks students about their expected probability of working in a job directly related to their bachelor's degree studies. The last two columns of table 6 report the responses to this question. The table shows that students, on average, expect higher chances of working in jobs directly related to their field of study if they were to migrate short-term, and specially long-term, than if they were to stay. 3 years finishing the bachelor's degree, they expect on average 41% and 46% higher chances of having a good study-job match in these two alternatives respectively. The difference, however, shrinks over time, as students expect their match prospects to improve over

time, in particular, in their region of birth. As with potential earnings, students expect on average temporary migration to help them have better matched jobs back in their region of birth: on average, 9% premium, statistically significantly different from zero at 1% level. Thus, better expected study-job matches at return could in part explain the expected wage premium after return. 10 years after finishing the bachelor's degree, students on average expect 18% premium in the probability of having a job directly related to their bachelor's degree if they are living at their chosen migration destination as opposed to in their region of birth. This number is statistically significantly different from zero at 1% level. This measures are reported in Panel E of table A.4.

V.3 Expectations about nonpecuniary factors

In order to decrease the burden of questions and minimize fatigue, students were asked about nonpecuniary outcomes by location as opposed to migration alternative. In particular, students were asked about the probability of enjoying the quality of their social life in their region of birth and their chosen migration destination 3 and 10 years after finishing the bachelor's degree and about their expected probability of enjoying being close to family, partner, and friends 3 years after in their home region and their reported migration destination. This means that I assume that 3 years after finishing the bachelor's degree and living at their migration destination, students expect to enjoy the nonpecuniary outcomes the same whether they plan to return or stay long-term. Similarly, 10 years after finishing the bachelor's degree and living in their region of birth, they expect to enjoy the nonpecuniary outcomes the same regardless of whether they have migrated and returned or they have never migrated.

Table 7: Beliefs about nonpecuniary outcomes

	3 years after		10 years after
	Social Life	Close	Social Life
Andalusia	0.80	0.85	0.67
	[0.80]	[0.90]	[0.70]
	(0.21)	(0.20)	(0.24)
Migration destination	0.59	0.34	0.50
	[0.60]	[0.30]	[0.50]
	(0.24)	(0.24)	(0.24)

Medians in brackets and standard deviations in parenthesis.

Results show that students expect the quality of social life and enjoying being close to loved ones to be higher home than at their chosen migration destination. Note that while their expected probability of enjoying the quality of social life decreases over time, it decreases

similarly at home and abroad. That is, students do not expect to adapt to their migration destination, in the sense that they do not expect the gap to close between home and abroad over time. The percent loss (negative premium) in social life enjoyment reported in table A.5 is on average 20% and 23%, 3 and 10 years after finishing the bachelor's degree, respectively (both statistically significantly different from zero at 1% level). The expected difference between home and abroad is higher for enjoying being close to family, partner and friends. The percent loss, reported in table A.5 is 56%. Note, however, that the expected probability -in levels- abroad is not zero (the mean is 34% and the median is 30%, Table 7). This suggests that students, to an extent, choose migration destinations where they have friends, partners, or family members.

V.4 Interpolations of expectations over the life-cycle by migration alternative

The fact that students' beliefs are elicited for two future points in time means we must interpolate the two data points within each migration alternative in order to estimate the life-cycle model. It is important to emphasize that these approximations are entirely individual-specific. I assume that all outcomes have a linear growth rate and assume that these growth rates are location specific. For the shot-term migration, I assume that individuals return back to their region of birth at $t = 7$, corresponding to living at their chosen migration destination for 4 years. This is the average time that southern return migrants stay in the north (as reported in Section II). Section A.4 explains these approximations in detail.

Taking the present value of life-cycle earnings into account, the data show that 73% of students believe they would maximize their earnings over the life-cycle if they were to choose the long-term migration alternative. For 21% and 6% of students, instead, the earnings maximizing alternatives are, respectively, the short-term and the no-migration alternatives. Table A.6 reports the mean, median and standard deviations of the short- and long-term migration premia (relative to the no-migration alternative) as done in the previous section, but using the present values of the future expected outcomes over the life-cycle (as opposed to computing the premia in two single future points). The table shows that 10% of students believe they would have at least as a high a quality of social life over the life-cycle if they were to migrate (either short- or long-term) than if they were to stay. The table also shows that all students expect a negative return in enjoying being close to loved ones over the life-cycle, but that this value is lower under the short-term than the long-term migration alternative. Figure A.12 plots the distributions of these premia.

VI Model Results

This Section presents the parameter estimates of the utility function of the model presented in Section III, using the expectations data, interpolated over the life-cycle (see A.4 for a detailed explanation of these approximations).

VI.1 Estimation of the preference parameters

We begin by assuming that the preference shocks described in equation (1) are perceived to be independent and identically distributed across individuals and migration alternatives following a standard type I extreme-value distribution. Then, student i's subjective probability at time τ of following migration alternative m is given by

$$\begin{aligned} p_{im\tau} &= P_i(\mathcal{E}[U_{im}|\mathcal{I}_\tau] + \xi_{im\tau} > \mathcal{E}[U_{in}|\mathcal{I}_\tau] + \xi_{in\tau}, (m,n) \in M_i, m \neq n) \\ &= \frac{exp(\mathcal{E}[U_{im}|\mathcal{I}_\tau])}{\sum_{n \in M_i} exp(\mathcal{E}[U_{in}|\mathcal{I}_\tau])} \end{aligned} \tag{4}$$

Taking the "no-migration" alternative, denoted as $m = 1$, as the reference alternative, we can re-write the log relative probability of choosing migration alternative m relative to migration alternative $m = 1$ as

$$\begin{aligned} ln\left(\frac{\tilde{p}_{im\tau}}{\tilde{p}_{i1\tau}}\right) = \phi_1 \sum_{t=t_{i0}}^{T} \beta^{t+g_i} [\Delta \sum_{l=FT,PT} P_{imt}(L=l) * \mathbb{E}(w_{q,imt}|L=l)] \\ + \sum_{j=2}^{4} \phi_j \sum_{t=t_{i0}}^{T} \beta^{t+g_i} [\Delta P_{imt}(x=x_j)] + \gamma_m + \omega_{im} \end{aligned} \tag{5}$$

where Δ denotes the differencing operator taken with respect to the baseline migration alternative. $\sum_{l=FT,PT} P_{imt}(L=l) * \mathbb{E}(w_{q,imt}|L=l)$ are expected earnings, where $P_{imt}(L=l)$, $l = \{FT, PT\}$ is student i's expected probability of working full-time and part-time in migration alternative m at time t and $\mathbb{E}(w_{q,imt}|L=l)$ is students i's expected minimum (maximum) yearly gross earnings in migration alternative m at time t conditional on employment status, where $q \in \{min, max\}$. x_2, x_3, x_4 are the probability of having a job directly related to the bachelor's degree studies, the probability of enjoying the quality of social life, and the probability of enjoying being close to family, partner and friends respectively. γ_m for the no-migration alternative is normalized to zero. ω_{im} represents a measurement

error, which reflects that the reports of migration alternative probabilities in our data, $\tilde{p}_{im}$, measure the "true" probabilities, p_{im}, with some error.

We now have a linear relationship between the known quantities in the data. We estimate the linear regression using ordinary least squares (OLS) and least absolute deviation (LAD) estimators. For estimation using OLS, I recode all reported extreme probabilities of 0 and 1 to 0.001 and 0.999, respectively.[26] Take into account that while the OLS estimator is sensitive to these roundings, the quantile estimator is not, and therefore, it is preferred Blass et al. (2010). Since we have two observations per respondent, standard errors are clustered at the individual level.

VI.2 Model Estimates

Table 8 presents the LAD and OLS estimates of the utility specification in equation (3). All results assume that $\beta = 0.95$. Columns 1 and 3 show the results for the utility specification where students value expected minimum earnings, while columns 2 and 4 provide the counterpart results using maximum earnings.

In all four specifications, the expected minimum and maximum earnings coefficients are positive and statistically different from zero at the 1 percent level. The coefficients on minimum earnings are almost twice as large as those on maximum earnings, suggesting that the former is more important in determining migration choices. Regarding the nonpecuniary attributes, OLS estimates are always slightly larger than LAD estimates (especially for the study-job the match attribute), which reveals that individuals who expect the highest gains across alternatives in these attributes also report more extreme probabilities of migrating, i.e., they are more certain that they will *not* stay. The positive and at 1 percent statistically significant coefficient on the probability of having a job that is directly related to their bachelor's degree shows that expected gains in this career-related outcome is a relevant determinant of expected migration choices, even after controlling for expected earnings gains. As for nonpecuniary factors, enjoying the quality of social life and being close to family, partner and friends are positive and statistically different from zero at the 1 percent level. Overall, results show that students consider pecuniary and nonpecuniary outcomes when deciding which migration alternative to choose.

Parameter estimates are easier to interpret in terms of implied choice elasticities, willingness-

[26] Note that in this context, the reports of extreme values, probabilities of exactly zero or one, reflect rounding, not censoring or truncation. In this context, there is little substantive difference between expressing a very low probability of following a migration alternative as 0.01 or zero. In any case, as shown in section V.1, there are very few extreme cases in my data.

Table 8: Estimates of Model Parameters

	(1) LAD	(2) LAD	(3) OLS	(4) OLS
ϕ_1x10,000: Minimum earnings	0.124***		0.132***	
	(0.0247)		(0.0268)	
ϕ_1x10,000: Maximum earnings		0.0697***		0.0590***
		(0.0150)		(0.0124)
ϕ_2: Prob. of good study-job match	0.204***	0.204***	0.311***	0.322***
	(0.0783)	(0.0765)	(0.0901)	(0.0889)
ϕ_3: Prob. of ejoying social life	0.352***	0.348***	0.386***	0.371***
	(0.0636)	(0.0634)	(0.0890)	(0.0890)
ϕ_4: Prob. of enjoying being close	0.135***	0.130***	0.157***	0.160***
	(0.0436)	(0.0459)	(0.0570)	(0.0565)
γ_{ST}	0.371***	0.401***	0.347***	0.336***
	(0.114)	(0.138)	(0.0937)	(0.0930)
Constant	0.0421	0.0442	0.132	0.220
	(0.214)	(0.238)	(0.198)	(0.193)
N	1134	1134	1134	1134
adj. R^2			0.157	0.159
pseudo R^2	0.081	0.081		

- Note: Parenthesis in OLS columns report robust standard errors clustered at the individual level. Parenthesis in LAD columns reported bootstrapped standard errors with 1000 replications clustered at the individual level. Minimum and maximum earnings are earnings conditional on employment status averaged by employment status probabilities.

to-pay estimates and changes in migration choices that result from students' belief manipulation. I present these results in the sections below. In all these sections, I show the results for the LAD estimates reported in Column (1) in Table 8, which refer to the utility specification that includes expected minimum earnings.

VI.2.1 Choice elasticity of labor market outcomes

This section examines what the model estimates imply about the responsiveness of expected migration choices to changes in career-related outcomes. For example, in response to an increase in beliefs about minimum earnings in migration alternative m, how likely would an individual be to choose that migration alternative? How much more likely if, instead, for the same level of beliefs about earnings, beliefs about the probability of working full-time or part-time increased?

Table 9 reports migration choice elasticities using the model parameter estimates reported in the first column of Table 8. For each student i, I compute the percent change in the likelihood of choosing migration alternative m when beliefs about a given career-related outcome increase by 1% in each year of migration alternative m and are held constant in the other two alternatives. These choice elasticities are heterogeneous across students, as

they depend on individual specific beliefs $G_{i,\tau}(x|m,t)$ about outcomes for each alternative.

Table 9: Elasticity: Average percent change in the likelihood of choosing a migration alternative given a 1% increase of a given outcome in every period of that alternative

	Mininimum earnings	Full-time employment	Part-time employment	Study-Job match
% Δ No-migration	0.63	0.53	0.10	0.55
% Δ Short-term migration	0.75	0.64	0.11	0.58
% Δ Long-term migration	1.01	0.88	0.13	0.74

The mean elasticity (averaged across the three migration alternatives) is 0.80 for minimum earnings. This number is higher but similar in magnitude to other recent studies that analyze migration in Spain using aggregate data and alternative identification strategies and populations (see Melguizo and Royuela (2020), Clemente et al. (2016)). As examples of results from other contexts, who also use other methodologies, the elasticity I estimate is in the range of elasticity of the choice to changes in earnings estimated by Dahl and Sorenson (2010) for Danish engineers (whose estimates are between 0.5-1%) and is somewhat lower than that estimated by Bertoli et al. (2013) for migrations from Ecuador to Spain (which is equal to 0.95%). The elasticity of choice that I estimate for the probability of working full-time is equal to 0.68. That is, individuals respond not only to higher expected earnings but also to the expected probability of having a full-time job on its own. While responsiveness is highest for minimum earnings, results suggest that both outcomes play an important role in migration choices. The elasticity of choice to increases in the probability of working part-time is much lower, equal to 0.11. Finally, the mean elasticity of the study-job match is equal to 0.62, showing that young adults expected migration choices respond to good study-job matches, after controlling for earnings. The fact that percent changes are always biggest for long-term migration is driven by the fact that, on average, individuals report a lower likelihood of choosing this alternative.

VI.2.2 Willingness-to-pay to increase nonpecuniary attributes

Coefficients of nonpecuniary factors are easiest to interpret in terms of willingness-to-pay (WTP) estimates. For example, how much of their expected earnings are students willing to forgo to increase the probability of enjoying the quality of their social life by Δ percentage points, other things being equal? In this Section, I translate the magnitudes of the parameter estimates for enjoying the quality of social life and enjoying being close to family, partner and friends reported in Column (1) of Table 8 into willingness-to-pay estimates. Based on the utility specification in equation (5) the per-period willingness-to-pay

to experience an increase equal to Δ percentage points in outcome x_j in a each period is computed as

$$WTP = \frac{\phi_j}{\phi_1}\Delta$$

where $j = \{3, 4\}$. Column 1 of Table 10 reports the WTP to increase the nonpecuniary factor from its expected level in the long-term migration alternative to its expected level in the no-migration alternative. Panel A reports WTP estimates for increases in the probability of enjoying the quality of social life and Panel B for increases in the probability of enjoying being close to loved ones. The first row of each panel presents the estimates in euros. Standard errors, in parenthesis, are calculated using the delta method. The second row of each panel shows the estimates as a fraction of the average -across individuals and alternatives- annual minimum earnings, where annual is calculated as the total sum of minimum earnings in each path divided by the length of the path of each individual. This number is equal to 16,322€.[27]

Table 10: Willingness-to-pay to increase given attribute by Δ

	Δ	
	From m_3 to m_1	1 s.d.
	(1)	(2)
	A. *Enjoy social life*	
WTP (€, year)	5,980.03***	7,080.27***
	(1665.67)	(1,972.13)
WTP (as % of avg. annual earnings)	37%	43%
	B. *Enjoy being close*	
WTP (€, year)	6,204.93***	3,527.20***
	(2320.23)	(1,318.94)
WTP (as % of avg. annual earnings)	38%	22%

Note: Standard errors in parenthesis, calculated using the delta method. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. The average annual minimum earnings: 16,322€. 1 s.d. equals 0.25 p.p. for enjoying the quality of social life and 0.32 p.p. for enjoying being close to loved ones.

I find that students are willing to give up 37% of their average annual minimum earnings for such an increase in the chance of enjoying their quality social life. On the other hand, students are willing to give up 38%, to increase the likelihood of enjoying being close to

[27] For reference, the average annual minimum earnings if working full-time are equal to 21,189€.

family, partner, and friends. This number lies in the range of the WTP in order to live close to family estimated by Koşar et al. (2021) for US residents. They find an average WTP as a percent of income equal to 30% for individuals who define themselves as mobile and 56% for those define themselves as rooted . Our estimate being closer to the former than the later is consistent with young adults in our sample being less likely to be of a "rooted" type (i.e., they are less likely to own a house or have a family). Taking both nonpecuniary factors into account, young adults are willing to give up 74% of their lifetime earnings (12,185€ annually) to increase each of the nonpecuniary factors from their expected levels in the long-term migration alternative to their expected levels in the no-migration alternative. Overall, the total WTP for nonpecuniary factors is lower than the total moving costs typically estimated in migration studies, which exceed 100% of income (Kennan and Walker, 2011; Ransom, 2022).[28]

Column 2 reports the WTP estimates for increases equal to one standard deviation in each nonpecuniary outcome. This measure allows to compare the WTP of one nonpecuniary factor with the other, as it takes their dispersion into account. Results show that students have a higher WTP for the quality of social life than for being close to family, partner and friends. They are willing to pay 43% of their average annual earnings to increase the probability of enjoying the quality of social life by 1 standard deviation, while are willing to give-up 22% of their earnings for an equal increase in the probability of being close to loved ones.

VI.2.3 The relative role of pecuniary and nonpecuniary factors

So far, we have seen that both labor market outcomes and nonpecuniary factors are statistically significant and economically important determinants of migration choices. The goal of this section is to provide a meaningful metric to understand the *relative* role of the set of career-related outcomes and nonpecuniary factors on migration choices of highly-educated young adults in regions with poor labor market conditions. For this, I use the parameter estimates reported in the first column of Table 8 and predict the choice behavior under the two counterfactual scenarios. The first one equalizes labor market outcomes across alternatives and sets them equal to the no-migration alternative. That is, it assumes that young adults expect the same career prospects if they were to stay than if they were to follow short- or long-term migration. The second one sets the nonpecuniary factors equal

[28]These studies estimate dynamic choice models and identify moving costs by assigning a distinct status to each person's place of birth. Due to different modelling assumptions the numbers are hard to compare, but the discrepancy is likely due to two main factors. First, I am able to identify moving costs better. Second, I estimate costs for each individual's chosen migration destination relative to staying. In the two mentioned studies, the moving cost represents the cost faced by the average individuals if they were forced to move to an arbitrary location. As the authors say, the estimated cost would be lower if individuals were allowed to choose the best available location to them.

across alternatives and to the no-migration alternative. In other words, it assumes that students believe their quality of social life and enjoyment from being close to loved ones will be unaffected by their migration choices. Given the described expectations and estimated preferences, we expect the first counterfactual to push students away from the long-term migration and into the no-migration. This is because nonpecuniary factors now play a larger role in sorting and because students' beliefs about labor market outcomes are much lower in the no-migration alternative than in the long-term migration alternative. Following the same logic, we expect the second counterfactual to cause the opposite. That is, to push students away from the no-migration and into the long-term migration. Because the short-term migration can be seen as a milder version of the long-term migration, we expect the inflows and outflows to have the same direction as the long-term migration but with lower magnitudes. This is precisely what I find. The question then is to investigate which counterfactual causes larger changes in the expected choice probabilities, as this gives a meaningful metric to understand the implied magnitudes of our estimates.

Results are shown in Table 11. The first column displays the baseline probability of choosing each migration alternative. Columns (2a) and (2b) show the percentage point increase/decrease in the probability of choosing each migration alternative under the counterfactual scenario relative to the baseline. Columns (3a) and (3b) present the mean percent changes by alternative. Note that the effects of these counterfactuals are generally heterogeneous across students.

Table 11: Percent change in the probability of choosing migration alternative m when beliefs about labor market outcomes and nonpecuniary factors are equalized across alternatives, setting equal to the no-migration alternative.

	Base	Equal beliefs on career outcomes		Equal beliefs on nonpecuniary outcomes	
	Level	Δ	% Δ	Δ	% Δ
	(1)	(2a)	(3a)	(2b)	(3b)
No-migration	0.360	0.089	24.72	-0.148	-41.11
Short-term migration	0.394	-0.033	-8.37	0.038	9.64
Long-term migration	0.246	-0.057	-23.17	0.111	45.12

Results show that expected nonpecuniary factors play a larger role in determining expected migration choices. In other words, the percentage point changes that result from equalizing nonpecuniary factors across alternatives are always larger than those resulting from setting labor market outcomes equal. For example, if students believed that they would enjoy the same nonpecuniary factors if they chose the short-or long-term migration as if they

were to stay, the probability of staying would decrease by 41%. Instead, if they thought their region of birth offered the same career prospects as their chosen migration destination over the life-cycle, the probability of staying would increase by 25%. Overall, results show that expected migration choices are more responsive to expected differences in non-pecuniary factors than to expected differences in labor market outcomes.

VI.2.4 The role of planned short-term migration

This section investigates the drivers of planned short-term migration using two counterfactual exercises. Many migrations are temporary. Using administrative data, section II showed that there are more than twice as many temporary migrants as there are long-term migrants among individuals with tertiary education who move from Andalusia to the center-north of Spain. Results in section V showed that short-term migration is on average seen as 40% more likely than long-term migration by young adults in our sample. Given its high prevalence, it is interesting to understand why young adults plan to migrate short-term.

I perform two counterfactuals, which manipulate students' expectations in the periods when individuals are back in their region of birth after having migrated temporarily, $t \in [7, 10]$. The goal of the first counterfactual is to explore the role of short-term migration as a human capital acquisition strategy. For this, it assumes that each student expects, in the short-term migration alternative in periods $t \in [7, 10]$, the same labor market outcomes that she expects in the no-migration alternative in these same periods, all else equal. The literature has often modeled temporary migration as an optimal life-cycle investment (Dustmann and Weiss, 2007; Thom, 2010; Dustmann et al., 2011; Dustmann and Görlach, 2016), where individuals can acquire abroad, more efficiently than at home, human capital that is highly valued at home. The young engineers in our sample, for example, could plan to work in a big, internationally renowned firm in Madrid for some years, and expect that experience to help them get a better job in Andalusia some years after. Results presented in section V showed that on average this is the case. The mean of the expected *full-time* wage premium after return is equal to 13%, the mean of the expected wage premium after return is equal to 19% and the mean of the expected study-job match premium is equal to 9% (these results are presented in Table A.4).[29] This, however, does not mean that anticipating these gains is a driver of their decision-making. For example, it could be that those who expect highest premium after return are those who have most positive beliefs about the benefits of migration in general, and are those who are most likely to migrate long-term. The aim of the second counterfactual is to assess the extent to which short-term migration

[29] Expected wages refer to expected wages conditional on employment status averaged by employment status probabilities.

is motivated by individuals' willingness to avoid having too low nonpecuniary factors for too long. To this end, it assumes that each student expects, in the short-term migration alternative in periods $t \in [7, 10]$, the same nonpecuniary outcomes that she expects in the long-term migration alternative in these same periods, all else equal.

Given that students on average expect a premium after return and expect the long-tern migration to have the lowest nonpecuniary factors, both counterfactuals make the short-term migration a less appealing alternative for the average student. If these are drivers of expected short-term migration, we expect the mean expected choice of short-term migration to decrease under each of the two counterfactual scenarios relative to baseline, where individuals' expectations are not manipulated. This is what I find. The question then is to assess which of the two mechanisms drives the largest changes in the expected choice of short-term migration.

Results are presented in Table 12. Columns (1a) and (1b) show the percentage point change caused in the expected choices of short-term migration by counterfactual 1 and counterfactual 2, respectively. Columns (2a) and (2b) present the percent changes.

Table 12: Percent change in the probability of choosing short-term migration when beliefs are equalized for the periods when the individual is back in her region of birth *after* having migrated.

	Counterfactual 1: Equal beliefs about pecuniary outcomes ST = No migration		Counterfactual 2: Equal beliefs about nonpecuniary outcomes ST = Long-Term m.	
	Δ (1a)	% Δ (2a)	Δ (1b)	% Δ (2b)
Short-term migration	-0.018	-4.45	-0.068	-17.45

Note: Expected probability of short-term migration at baseline is 0.394.

Using the same model estimates as reported in Table 8, I find that the choice of short-term migration would fall by 1.8 p.p. (4%) if students believed that there is a wage premium equal to 0 after return in all labor market outcomes. The fact that the change is negative shows that the anticipation of a wage premium after return influences the decision to plan a temporary migration. However, its role is rather small. Results show that changes in expected choices of short-term migration are larger under the second counterfactual. If students believed that nonpecuniary factors after having returned back to their region of birth were equal to those they would experience under long-term migration, the expected choice of short-term migration would drop by 6.8 p.p., a drop equal to 17%.

These results suggests that young individuals' choice of whether to return back to their region of birth is more sensitive to nonpecuniary conditions at the migration destination (e.g., whether they make friends, find a partner or adapt to the lifestyle of the destination) than to labor market conditions at home.

VI.3 Predictive Validity

The employed approach emphasizes that it is the beliefs before the choice is made -not realized outcomes in later periods- which are fundamental to understand choices. Whether these perceptions are biased is then arguably an irrelevant issue from the perspective of understanding the decision.[30] The methodology instead rests on the implicit assumption that individuals' reported choices in the survey are reflective of what respondents would do in actual scenarios. There is growing evidence that individuals' reported subjective choice probabilities strong and positively correlate with their realized choices years later. See Arcidiacono et al. (2020) for occupational choices, Wiswall and Zafar (2021) for educational choices, and most relevant to this study, Koşar et al. (2021) for migration choices.

Given that I carried out the first survey in June 2020, when students were about to finish their bachelor's degree, and some students will pursue further studies before entering the labor market, the follow-up survey should be carried out in the near future. As suggestive evidence of the predictive validity of their reported choices, I look at students self-selection into migration based on individual characteristics. The finding that those who report higher migration likelihoods in my sample share the same characteristics of actual migrants in Spain would provide a first suggestive evidence that their reported expected choices are reflective of actual choices in the future. Results of Table 13 show that this is the case. Being male, from a high socioeconomic status, older and having higher grades are all positive and statistically significant determinants of expected migration probabilities. Interestingly, the comparison of columns 1 and 2 show that selection into migration in terms of gender is driven in part by selection into field of study. Engineering students, who are more likely to be male, are almost 60% more likely to migrate than students of Social Science and Law. Overall, results are in line with self-selection into migration of young adults in Spain (see González-Leonardo et al. (2022)).

[30] To the extent that biased beliefs can be corrected with information interventions, however, assessing the accuracy of beliefs is relevant from a policy-making perspective.

Table 13: Fractional logit estimates

	Expected probability of migrating	
	(1)	(2)
Female	0.838*	0.889
	(0.0884)	(0.0943)
High SES	1.488***	1.381***
	(0.156)	(0.148)
Age	0.936**	0.930**
	(0.0281)	(0.0273)
Above median standardized GPA	1.289**	1.312**
	(0.139)	(0.141)
Field of study		
- Engineering		1.573***
		(0.178)
- Natural science		1.165
		(0.231)
N	490	490

The outcome variable is the probability of migrating, which pulls the probability of migrating short- and long-term together. I use the with fractional logit estimator (Papke and Wooldridge, 1996) which is adequate when the outcome variable is a fraction/ probability. The table reports exponentiated coefficients. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Baseline categories are Male, Low SES (none of the parents has tertiary education) and Social Science and Law. GPA is standardized by field of study and university.

VII Conclusion

Young adults' migration choices at the beginning of their professional careers play a key role in determining their employability and future earnings profiles. This paper investigates the role of expected pecuniary outcomes (earnings, employment and study-job match) and nonpecuniary factors (enjoying being close to family, partner and friends and enjoying the quality of social life) on migration choices. I focus on the most mobile group of people i.e., young and highly educated individuals, and study expected migration choices out of Andalusia, one of the poorest regions of Spain. Spain is a country with large employment and income disparities across regions, similar to other European countries. I find that both expected labor market returns and nonpecuniary factors are statistically and economically significant determinants of migration choices. However, counterfactual exercises show that the relative role of the set of nonpecuniary outcomes is larger than that of labor market outcomes on young adults' out-migration choices. Additionally, given their preferences and beliefs at the time of out-migration, counterfactual exercises suggest that their choice to return back to their region of birth is also likely to depend to a larger extent on the nonpecuniary experiences at the destination, such as making new friends or

forming a family, than on the labor market conditions at home. The important role played by nonpecuniary factors even for the most mobile group of people, showing that moving costs have an important social dimension, suggests a role for place-based policies as a tool to foster convergence across regions (Bartik, 2020).

References

Adda, Jerome, Christian Dustmann, and Joseph-Simon Görlach, "The Dynamics of Return Migration, Human Capital Accumulation, and Wage Assimilation," *The Review of Economic Studies*, 2022. 2, 4, 19

Arcidiacono, Peter, V. Joseph Hotz, and Songman Kang, "Modeling College Major Choices Using Elicited Measures of Expectations and Counterfactuals," *Journal of Econometrics*, January 2012, *166* (1), 3–16. 5

_ , _ , Arnaud Maurel, and Teresa Romano, "Ex Ante Returns and Occupational Choice," *Journal of Political Economy*, June 2020, *128* (12), 4475–4522. 5, 34

Arellano-Bover, Jaime, "The effect of labor market conditions at entry on workers' long-term skills," *Review of Economics and Statistics*, 2022, *104* (5), 1028–1045. 1

Attanasio, Orazio P. and Katja M. Kaufmann, "Education Choices and Returns to Schooling: Mothers' and Youths' Subjective Expectations and Their Role by Gender," *Journal of Development Economics*, July 2014, *109*, 203–216. 5

_ and _ , "Education Choices and Returns on the Labor and Marriage Markets: Evidence from Data on Subjective Expectations," *Journal of Economic Behavior & Organization*, August 2017, *140*, 35–55. 5

Bah, Tijan L and Catia Batista, "Why Do People Migrate Irregularly? Evidence from a Lab-in-the-Field Experiment in West Africa," *Kellogg Working Paper*, 2020, *435*, 45. 4

Bartik, Timothy J, "Using place-based jobs policies to help distressed communities," *Journal of Economic Perspectives*, 2020, *34* (3), 99–127. 36

Bertoli, S., J. Fernández-Huertas Moraga, and F. Ortega, "Crossing the Border: Self-selection, Earnings and Individual Migration Decisions," *Journal of Development Economics*, March 2013, *101*, 75–91. 3, 4, 28

Blass, Asher A., Saul Lach, and Charles F. Manski, "Using Elicited Choice Probabilities to Estimate Random Utility Models: Preferences for Electricity Reliability," *International Economic Review*, May 2010, *51* (2), 421–440. 5, 10, 18, 26

Boneva, Teodora, Marta Golin, and Christopher Rauh, "Can perceived returns explain enrollment gaps in postgraduate education?," *Labour Economics*, 2022, *77*, 101998. 5, 9

Büchel, Konstantin, Maximilian V. Ehrlich, Diego Puga, and Elisabet Viladecans-Marsal, "Calling from the Outside: The Role of Networks in Residential Mobility,"

Journal of Urban Economics, September 2020, *119*, 103277. 5

Clemente, Jesús, Gemma Larramona, and Lorena Olmos, "Interregional migration and thresholds: evidence from Spain," *Spatial Economic Analysis*, 2016, *11* (3), 276–293. 3, 28

Dahl, Gordon B., "Mobility and the Return to Education: Testing a Roy Model with Multiple Markets," *Econometrica*, 2002, *70* (6), 2367–2420. 4

Dahl, Michael S and Olav Sorenson, "The Migration of Technical Workers," *Journal of Urban Economics*, 2010, p. 13. 3, 5, 28

De la Roca, Jorge, "Selection in Initial and Return Migration: Evidence from Moves across Spanish Cities," *Journal of Urban Economics*, July 2017, *100*, 33–53. 8

Delavande, Adeline, "Pill, Pathch, or Shot? Subjective Expectations and Birth Control choicePILL„" *International Economic Review*, August 2008, *49* (3), 999–1042. 5

_ **and Basit Zafar**, "University Choice: The Role of Expected Earnings, Nonpecuniary Outcomes, and Financial Constraints," *journal of political economy*, 2019, *127* (5), 51. 5

Dustmann, Christian and Joseph-Simon Görlach, "The Economics of Temporary Migrations," *Journal of Economic Literature*, March 2016, *54* (1), 98–136. 2, 32

_ **and Yoram Weiss**, "Return Migration: Theory and Empirical Evidence from the UK," *British Journal of Industrial Relations*, 2007, *45* (2), 236–256. 32

_ **, Itzhak Fadlon, and Yoram Weiss**, "Return Migration, Human Capital Accumulation and the Brain Drain," *Journal of Development Economics*, May 2011, *95* (1), 58–67. 32

Festinger, Leon, *A Theory of Cognitive Dissonance*, Vol. 2 of *Stanford University Press*. 1957. 10

FundaciónBBVA, "Movilidad Universitaria," ESENCIALES Fundación BBVA- Ivie 31 2018. 10

Gibson, John and David McKenzie, "The Microeconomic Determinants of Emigration and Return Migration of the Best and Brightest: Evidence from the Pacific," *Journal of Development Economics*, May 2011, *95* (1), 18–29. 4

Gong, Yifan, Todd Stinebrickner, Ralph Stinebrickner, and Yuxi Yao, "The Role of Non-Pecuniary Considerations: Location Decisions of College Graduates from Low Income Backgrounds," *Centre for Human Capital and Productivity (CHCP) Working Paper Series*, 2022, *Working Paper #2022-01*, 58. 5

González-Leonardo, Miguel, Antonio López-Gay, and Albert Esteve, "Interregional migration of human capital in Spain," *Regional Studies, Regional Science*, 2022, *9* (1), 324–342. 6, 34, 43

Grogger, Jeffrey and Gordon H. Hanson, "Income Maximization and the Selection and Sorting of International Migrants," *Journal of Development Economics*, May 2011, *95* (1), 42–57. 4

Huttunen, Kristiina, Jarle Møen, and Kjell G Salvanes, "Job Loss and Regional Mobility," *Journal of Labor Economics*, 2018, *36* (2), 31. 5

Jensen, Robert, "The (Perceived) Returns to Education and the Demand for Schooling*," *The Quarterly Journal of Economics*, May 2010, *125* (2), 515–548. 19

Kaufmann, Katja Maria, "Understanding the Income Gradient in College Attendance in Mexico: The Role of Heterogeneity in Expected Returns," *Quantitative Economics*, 2014, *5* (3), 583–630. 5

Kennan, John and James R. Walker, "The Effect of Expected Income on Individual Migration Decisions," *Econometrica*, 2011, *79* (1), 211–251. 3, 4, 13, 30

Koşar, Gizem, Tyler Ransom, and Wilbert van der Klaauw, "Understanding Migration Aversion Using Elicited Counterfactual Choice Probabilities," *Journal of Econometrics*, 2021, p. S0304407621000415. 5, 30, 34

Manski, Charles F., "Measuring Expectations," *Econometrica*, 2004, *72* (5), 1329–1376. 2

Manski, Charles F et al., "Adolescent econometricians: How do youth infer the returns to schooling," *Studies of supply and demand in higher education*, 1993, *43*, 60. 2

McKenzie, David, John Gibson, and Steven Stillman, "A Land of Milk and Honey with Streets Paved with Gold: Do Emigrants Have over-Optimistic Expectations about Incomes Abroad?," *Journal of Development Economics*, May 2013, *102*, 116–127. 4

Melguizo, Celia and Vicente Royuela, "What drives migration moves to urban areas in Spain? Evidence from the Great Recession," *Regional Studies*, 2020, *54* (12), 1680–1693. 3, 28

Müller, Steffen and Renate Neubäumer, "Size of training firms–the role of firms, luck, and ability in young workers' careers," *International Journal of Manpower*, 2018. 1

OECD, "Job Creation and Local Economic Development 2020: Rebuilding Better," *OECD Publishing, Paris.*, 2020. 22

_ , "OECD Regions and Cities at a Glance 2020," 2020, p. 166. 6

Papke, Leslie E and Jeffrey M Wooldridge, "Econometric methods for fractional response variables with an application to 401 (k) plan participation rates," *Journal of applied econometrics*, 1996, *11* (6), 619–632. 35

Ransom, Tyler, "Ransom, T. (2022). Labor Market Frictions and Moving Costs of the Employed and Unemployed," *Journal of Human Resources*, 2022, *57*. 3, 13, 30

Romero-Valiente, Juan Manuel and Antonio Luis Hidalgo-Capitán, "El subregistro consular: magnitudes y efectos en las estadísticas de emigración española," 2014. 43

Schwandt, Hannes and Till Von Wachter, "Unlucky cohorts: Estimating the long-term effects of entering the labor market in a recession in large cross-sectional data sets," *Journal of Labor Economics*, 2019, *37* (S1), S161–S198. 1

Stinebrickner, R. and T. R. Stinebrickner, "A Major in Science? Initial Beliefs and Final Outcomes for College Major and Dropout," *The Review of Economic Studies*, January 2014, *81* (1), 426–472. 5

Thom, Kevin, "Repeated circular migration: Theory and evidence from undocumented migrants," *New York University, mimeo*, 2010. 32

Tunali, Insan, "Rationality of Migration," *International Economic Review*, 2000, *41* (4), 893–920. 4

Wiswall, M. and B. Zafar, "Determinants of College Major Choice: Identification Using an Information Experiment," *The Review of Economic Studies*, April 2015, *82* (2), 791–824. 1, 5, 12, 19

Wiswall, Matthew and Basit Zafar, "Human Capital Investments and Expectations about Career and Family," *journal of political economy*, March 2021, *129* (5), 64. 5, 34

Zafar, Basit, "College Major Choice and the Gender Gap," *Journal of Human Resources*, 2013, *48* (3), 52. 5

Zerecero, Miguel, "The Birthplace Premium," *Working paper*, 2022, p. 93. 13

A Appendix

A.1 Survey administration

Current data protection policies prevent Spanish universities from sharing students' personal information with third parties. Thus, survey administration was carried out with the collaboration of the 5 different departments, who kindly offered to send the survey link through their email account-this is the official channel that is used to communicate news to the students at faculty level-. This procedure to administer the survey necessarily required the survey link included in the email to be an *anonymous link*[31] type. The downside of using this type of survey link is that the survey can be completed multiple times by the same individual. Thus, these links are generally incompatible with monetarily incentivized surveys, a widespread procedure in economics to ensure survey participation -as well as important in this study-.

To keep the environment controlled while ensuring a high participation, I divided the study into two surveys, that were distributed 2 or 3 days apart. Importantly, these surveys were not presented as independent ones, nor did the second survey come as a surprise. From the beginning, the email that students received from the universities introduced the study as a two survey one. The email described the timing, duration and financial compensation of each survey, and explained that participation in the first survey was necessary but not sufficient to receive the second survey link. To ensure a truthful reporting, however, the selection criterion for the reception of the follow-up survey was not mentioned to the students. The email also explained that all the survey payments would be done through a mobile phone payment platform that is widely used in Spain: BizumAfter the description, the email included the link to the first survey.

The purpose that each survey ought to serve was different, and thus, so were their designs. The goal of the first survey was twofold: First, to collect students' personal information. This allowed not only to send the second survey through an *individual link*[32], but will also allow to contact students in the future. Second, to limit participation in the second survey to those students who were born in Andalusia.

[31] An anonymous link is an URL link that can be pasted into an email, website or any other mode of communication. In general, a participant can take the survey as many times as she wants. The "Prevent Ballot Box Stuffing" option for anonymous links in Qualtrics (which was used in this survey), deters respondents from taking a survey multiple times by placing a cookie on their browser when they submit a response. However, it can be circumvented by savvy participants clearing their browser cookies, switching to a different web browser, or using a different device.

[32] An individual link is a personalized link that can only be used once. The respondent's name, email, and other information from the contact list is automatically saved with their survey data. This means one can track responses in progress and send out reminders.

A.2 Individual specific migration alternatives

To make the migration alternatives easier to envision, the survey described students' migration alternatives with their reported study plans and migration destination. These are just individual-specific versions of the counterfactual alternatives. For example, if student i answered that her highest expected level of education was a master's degree in [*1. Another Spanish region/2. Province of Madrid*] and that she would move to [*1. Another Spanish region/2. Province of Madrid*] if she were to move outside her region of birth, her migration alternatives were described as follows:

> ***No-migration,*** $m = 1$*: Within the 3 years after finishing the bachelor's degree, you pursue your Master's degree in* [*Madrid*]*, you finish your studies, and start living in Andalusia. 10 years after graduation, you continue living in Andalusia.*
> ***Short-term migration,*** $m = 2$*: Within the 3 years after finishing the bachelor's degree, you pursue your Master's degree in* [*Madrid*]*, you finish your studies, and continue living in* [*Madrid*]*. You return to Andalusia to live within 10 years after graduation.*
> ***Long-term migration,*** $m = 3$*: Within the 3 years after finishing the bachelor's degree, you pursue your Master's degree in* [*Madrid*]*, you finish your studies and continue living in* [*Madrid*]*. 10 years after graduation, you continue living in* [*Madrid*]*.*

Students were also shown a simplified version of these alternatives in a table that stated the locations where they were assumed to be living 3 and 10 years after finishing the bachelor's degree in each migration alternative.

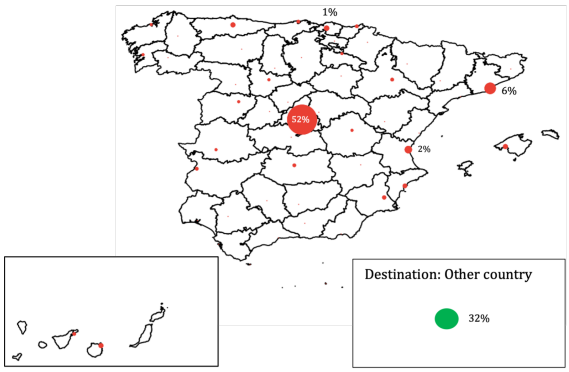
A.3 Chosen migration destinations

Map 2a reports the fraction of students that choose each place as a destination if they were to migrate. There are two clear most likely destinations: 52% of students would move to the capital city of Spain, Madrid. 32% would migrate to another country (87% of these to another country in Europe). For comparison, Map 2b shows the locations where those who move out of Andalusia move to, when they are between 23-35 years old, using administrative data (Residential Variation Statistics, yearly averages between 2015-2019). These dataset measures all residential variations with origin and/or destination in Spain within a calendar year. This dataset has two caveats to study migration of highly-educated individuals, but to the best of my knowledge is the best data to analyze internal and international migration jointly out of a place. First, the data does not include information on the individual's educational level. The fact that a high fraction of individuals choose the islands as migration destinations (see Map 2b) is driven by those with no tertiary education "Balearic Islands attract large groups of people, but mainly low-educated individuals

to the tourist industries" (González-Leonardo et al. (2022), page 237). Second, given that only individuals who register themselves in the new residential location are included in this statistic, the dataset is known to underestimates international migration by about 17%-35% Romero-Valiente and Hidalgo-Capitán (2014). Taking these two issues into account, the reported destinations by survey participants and observed moves in the administrative data follow the same pattern: 27% of young Andalusians move to the capital city of Spain, Madrid and 16% move to a different country.

Figure A.2: Chosen destinations

(a) Survey



(b) Residential Variation Statistics

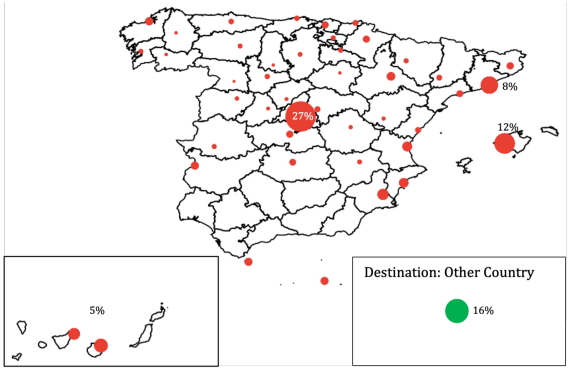


Fig 2.a.: Chosen destinations by survey participants: 52% Madrid, 28% Europe, 6% Barcelona, 2% North America, 1% South America, 1% Biscay. Remaining destinations, less than 1% each. Fig 2.b.: Migration moves using administrative data (Residential Variation Statistics). Sample restricted to individuals born in Andalusia, that move out of this region when they are between 23-35 years old. 27% Madrid, 16% another country, 12% Balearic Islands, 8% Barcelona, 5% Canary Islands.

A.4 Migration alternative approximations

For each individual and each migration alternative, the survey elicited beliefs about the expected minimum and maximum full-time earnings, the probability of working full-time, working part-time, having a good study-job match and enjoying social life 3 and 10 years after finishing the bachelor's degree. Using these two points per individual i and migration alternative m, I assume that outcomes have a linear growth throughout the migration alternative. This resembles the growth in career related outcomes typically observed over the very beginning of individuals' labor market trajectory, which is the period in which our migration alternatives are defined. On average, students are 25 years old at the beginning of the alternative, t_{i0}, and are 33 at the end of the alternative, at $T = 10$. Specifically, we approximate each alternative as follows.

By definition of the alternatives, the no-migration and long-term migration alternatives imply living in the same location (in their region of birth, Andalusia, and at each students'

chosen migration destination respectively) throughout the entire alternative. For these two alternatives, we assume that these outcomes grow linearly throughout the alternative and denote the growth rates as g_{i,x,m_1} and g_{i,x,m_3}, where the subscripts i and x denote that growth rates are individual and outcome specific, and m_1 and m_3 refer to the no-migration and long-term migration alternatives respectively.

$$\begin{aligned} g_{i,x,m_1} &= \frac{Pr(x|i, m = 1, t = 3) - Pr(x|i, m = 1, t = 10)}{10 - 3} \\ g_{i,x,m_3} &= \frac{Pr(x|i, m = 3, t = 3) - Pr(x|i, m = 3, t = 10)}{10 - 3} \end{aligned} \tag{6}$$

where x is equal to minimum and maximum earnings if working full-time, study-job match, working full-time, working part-time and enjoying social life. Then, the probability of outcome x in period t in migration alternatives m_1 and m_3 for student i are defined as:

$$\begin{aligned} Pr(x|i, m = 1, t) &= Pr(x|i, m = 1, t = 3) + g_{i,x,m_1} * (t - 3), \quad \text{for} \quad t \in [t_{i0}, 10] \\ Pr(x|i, m = 3, t) &= Pr(x|i, m = 3, t = 3) + g_{i,x,m_3} * (t - 3), \quad \text{for} \quad t \in [t_{i0}, 10] \end{aligned} \tag{7}$$

where the value of t_{i0} depends on the expected maximum level of education of student i, with t_{i0} being equal to 0,1, 2 and 3 for students whose maximum expected level of education is a bachelor's degree, other type of studies, a master's degree and a PhD respectively.

The survey did not ask students about the period in which they would return back to their region of birth to work conditional on choosing the short-term migration trajectory. I assume that all students return back at period $t = 7$, which corresponds to living at the chosen destination for 4 years. This is roughly the average time that internal southern migrants in Spain spent in the north, as shown in Table A.1. Thus, in the short-term migration alternative, $m = 2$, students are assumed to be living at their chosen destination $\forall t, t < 7$, and back at their region of birth at $\forall t, t \geq 7$. For this alternative, we assume that students believe each outcome's growth rate to be location specific, and approximate the alternative using the previously calculated individual and location-specific growth rates, g_{i,x,m_1} and g_{i,x,m_3}. The probability of outcome x in period t for student i in the short-term migration alternative, $m = 2$, is defined as:

$$Pr(x|i, m = 2, t) = \begin{cases} Pr(x|i, m = 2, t = 3) + g_{i,x,m_3} * (t - 3), & \text{for} \quad t_{i0} \leq t \leq 6 \\ Pr(x|i, m = 2, t = 10) + g_{i,x,m_1} * (t - 10), & \text{for} \quad 6 < t \leq 10 \end{cases} \tag{8}$$

where the value of t_{i0} is defined as above.

Finally, students were asked about the probability of enjoying being close to family members, partner and friends 3 years after finishing the bachelor's degree only, if they were living in their region of birth and if they were living at their chosen migration destination. We assume that the value of this outcome is location specific and constant over time. Then, probability of enjoying being close to family members, partner and friends in period t in migration alternatives m_1 and m_3 for student i are defined as:

$$\begin{aligned} Pr(x|i, m = 1, t) &= Pr(x|i, m = 1, t = 3), \quad \text{for} \quad t \in [t_{i0}, 10] \\ Pr(x|i, m = 3, t) &= Pr(x|i, m = 3, t = 3), \quad \text{for} \quad t \in [t_{i0}, 10] \end{aligned} \tag{9}$$

where the value of t_{i0} is defined as above. And the probability in migration alternative m_2 as:

$$Pr(x|i, m = 2, t) = \begin{cases} Pr(x|i, m = 3, t = 3), & \text{for} \quad t_{i0} \leq t \leq 6 \\ Pr(x|i, m = 1, t = 3), & \text{for} \quad 6 < t \leq 10 \end{cases} \tag{10}$$

Figures

Figure A.1: Location of universities in the sample

Note: The university marked in red is the University of Seville (Universidad de Sevilla, U.S.) and the one marked in blue is the University of Granada (Universidad de Granada, UGR). The blue line marks the borders of the region of Andalusia.

Figure A.2: Kernel densities of migration choice probabilities across students

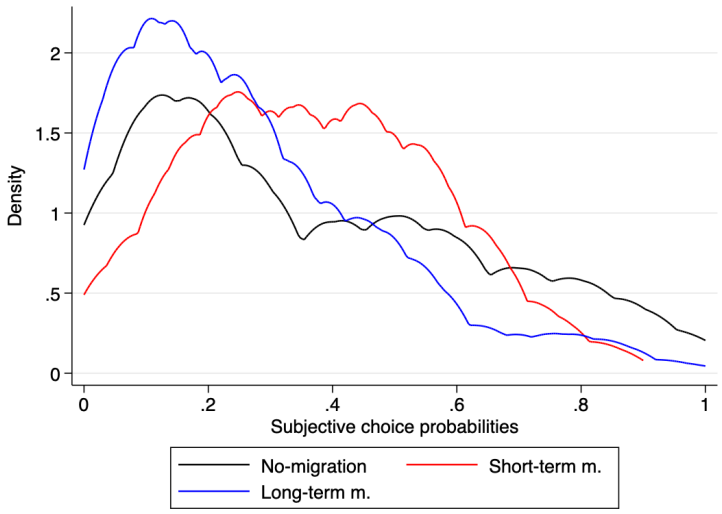
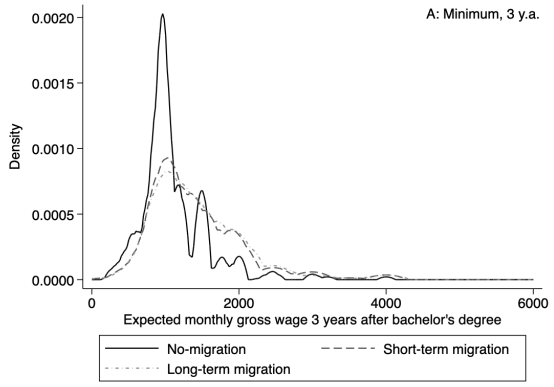
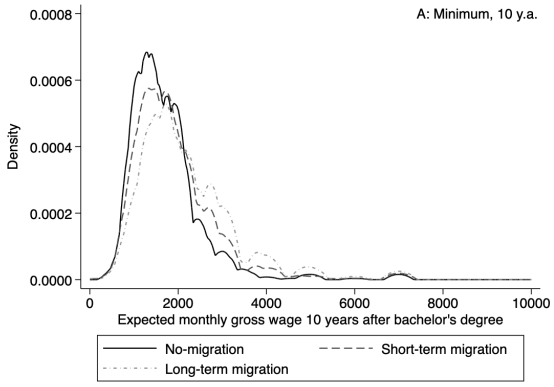


Figure A.3: Probability density function of expected minimum monthly gross earnings 3 and 10 years after finishing the bachelor's degree by migration alternative

(a) 3 years after



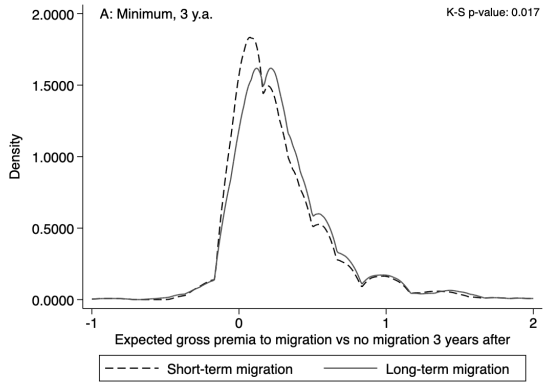
(b) 10 years after



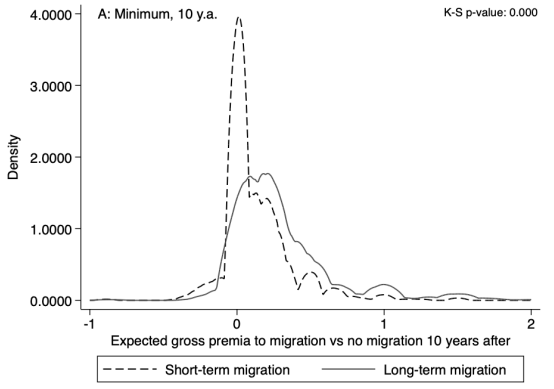
Note:

Figure A.4: Minimum earnings premia from short-term and long-term migration relative to no-migration

(a) 3 years after



(b) 10 years after



Note: Premia from short-term vs no-migration and from long-term vs no-migration. K-S = Kolmogorov–Smirnov.

Figure A.5: Distribution of full-time earnings premium from short-term migration relative to no -migration 10 years after

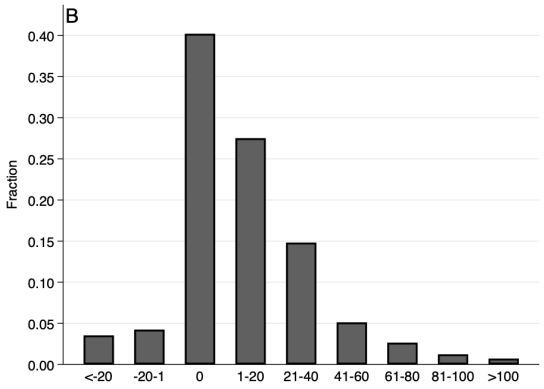


Figure A.6: Probability of working full-time 3 and 10 years after by migration alternative

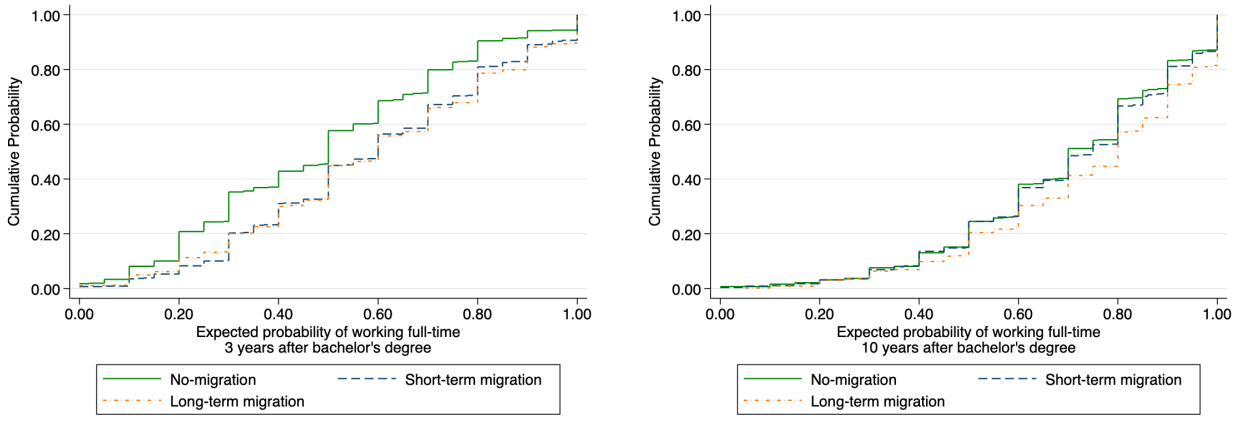


Figure A.7: Probability of being unemployed 3 and 10 years after by migration alternative

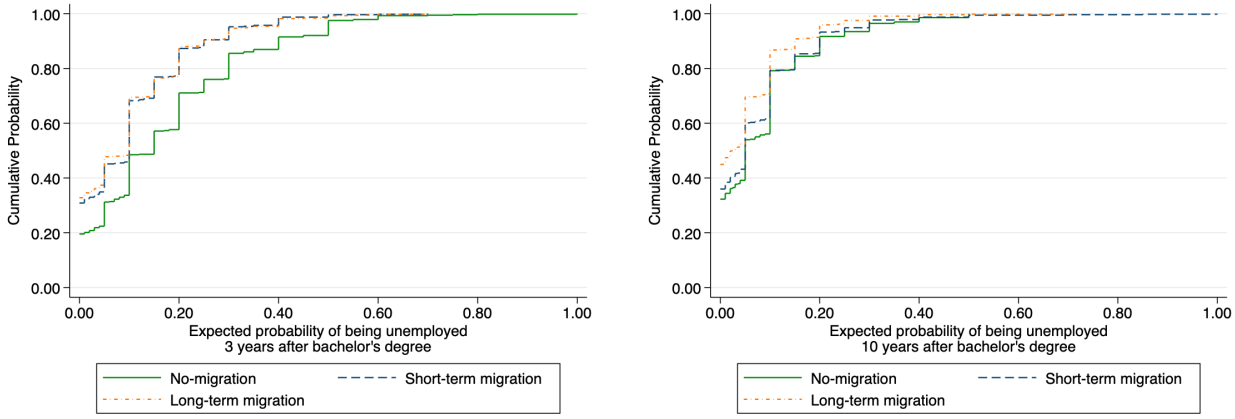
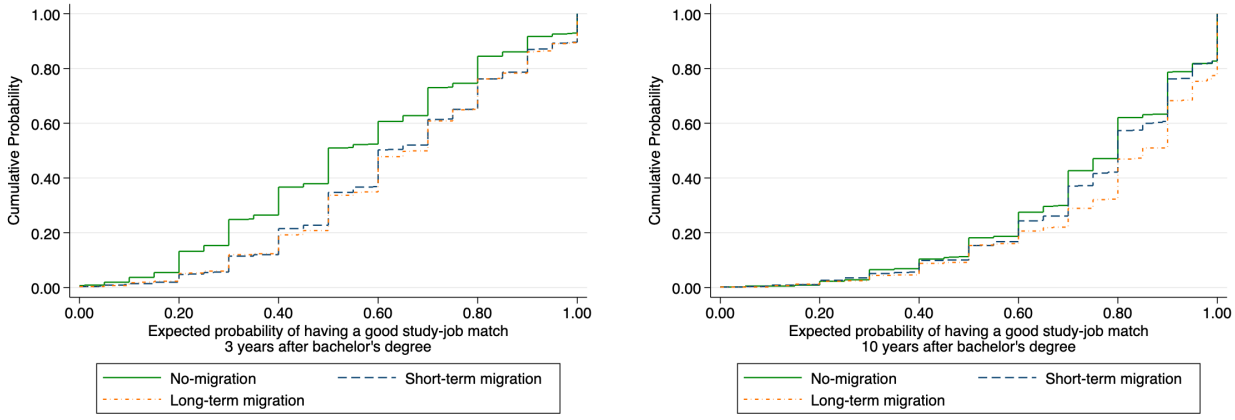


Figure A.8: Probability of having a good study-job match 3 and 10 years after by migration alternative



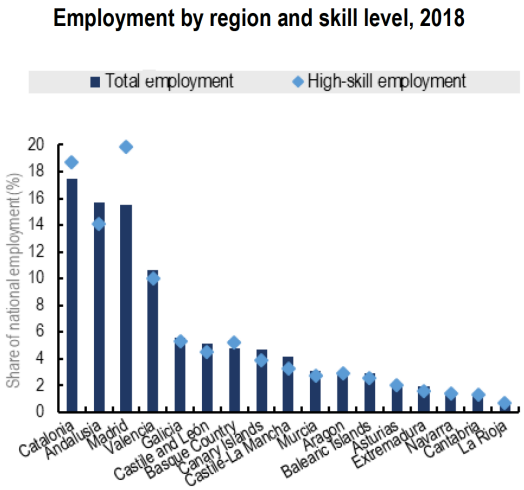


Figure A.9: Source: OECD (2020), Job Creation and Local Economic Development 2020. Rebuilding Better, OECD.

Figure A.10: Probability of enjoying social life 3 and 10 years after by location

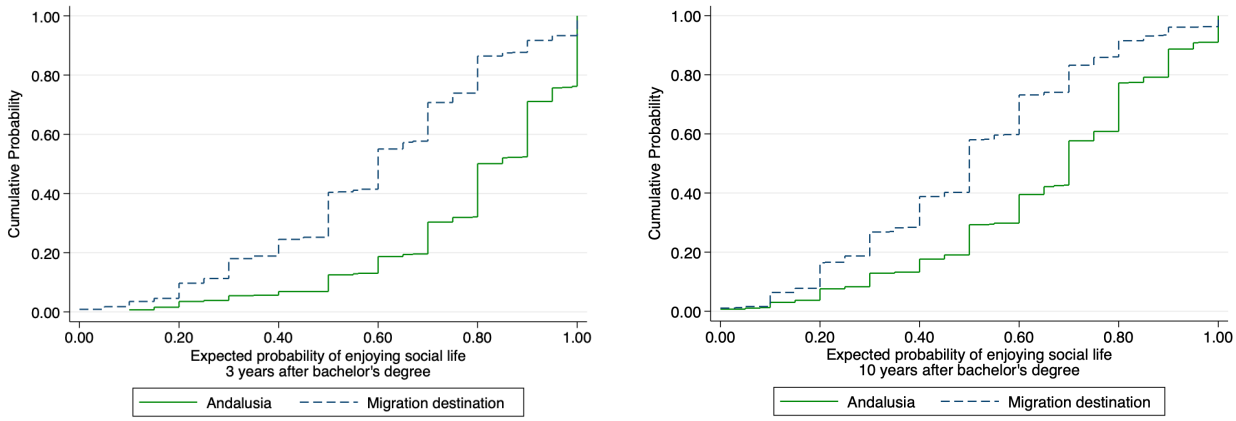


Figure A.11: Probability of enjoying being close 3 years after by location

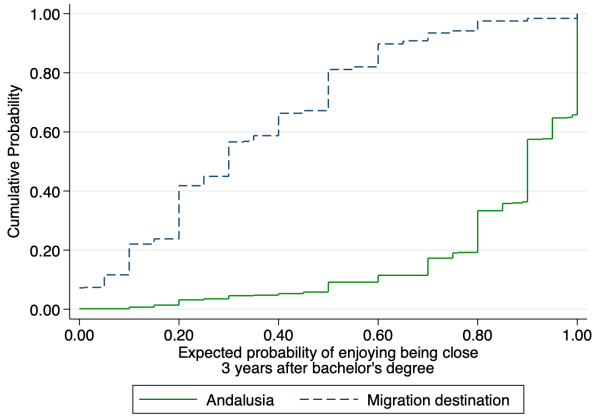
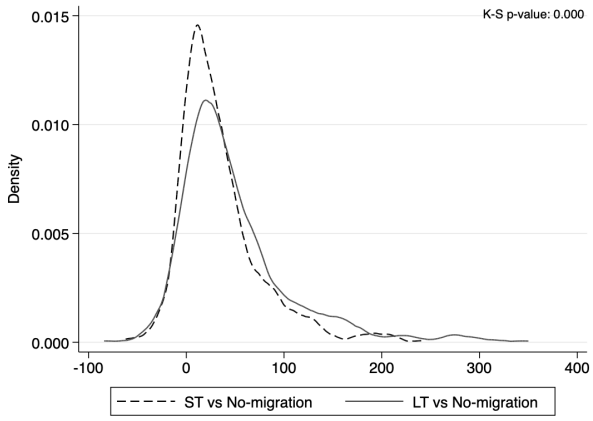
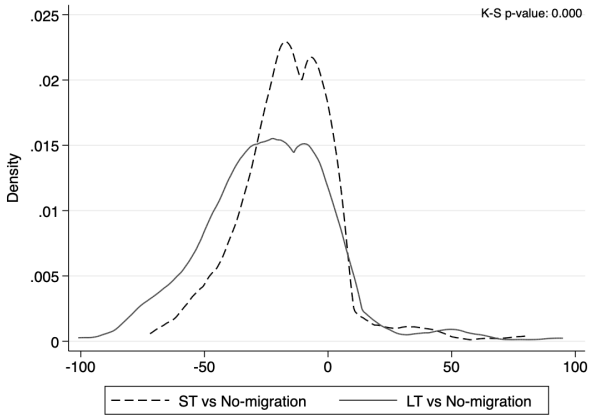


Figure A.12: Densities of life-cycle premia

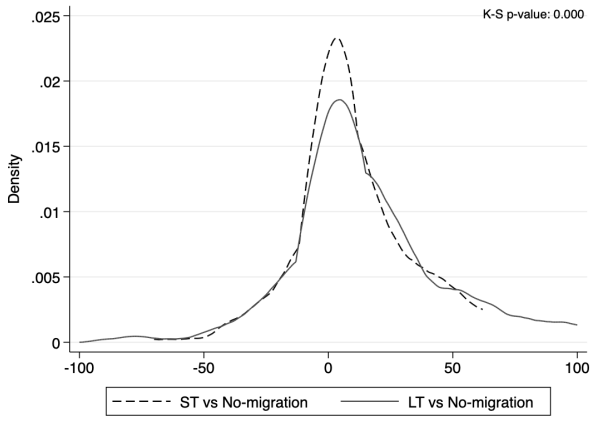
Minimum Earnings (weighted by employment status)



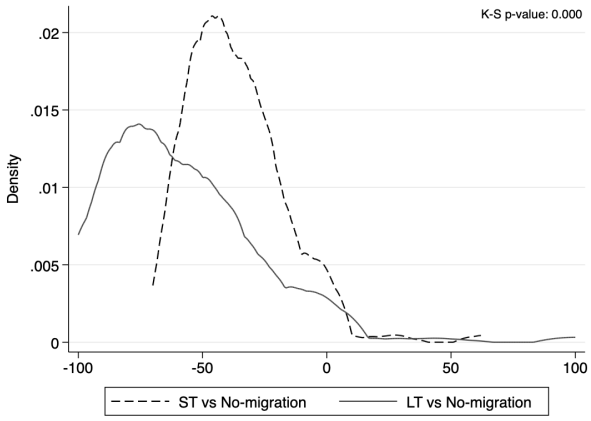
Enjoy Social Life



Study-job match



Enjoy Closeness to loved ones



Premia from short-term vs no-migration and long-term vs no-migration. K-S = Kolmogorov–Smirnov.

Tables

Table A.1: Length of stay in the north for cohorts born 1980-1985, with tertiary education and that started working in the south

	Long-term migrants		Short-term migrants	
	Andalusia	Any, south	Andalusia	Any, south
Age at labor market entry	22.07	21.79	21.25	21.23
Age at first move to the north	29.56	29.16	25.87	26.01
Number of months in the north	76.78	79.19	48.91	44.49

Note: Data from the Spanish Work History Sample, waves 2006-2019. The sample is restricted to individuals born in the south of Spain and born between 1980-1984. Migration moves are identified by the location of the establishment where the individual works. Only first out-moves and first return moves are identified. Individuals are followed from their first employment until the year 2019. All individuals have tertiary education.

Table A.2: Potential sources of information

	Mean
Own labor market experience while studying	
Has no experience	0.58
Job search	
Has not applied for a job	0.68
Has applied for a job	
- In Andalusia	0.78
- In another Spanish region	0.14
- In another country	0.08
Siblings' labor market experience	
Has no older sibling working	0.62
Has older sibling working	
- In Andalusia	0.67
- In another Spanish region	0.18
- In another country	0.15

Table A.3: Categorization of Degrees

Degrees in the Department of Business and Economics
Double Degree in Business Administration and Management and Law
Double Degree in Business Administration and Management and Building
Double Degree in Law and Economics
Degree in Business Administration and Management
Degree in Economics
Degreen in Tourism
Degree in Marketing and Market Research
Degree in Finance and Accounting
Degrees in the Department of Engineering
Degree in Aerospace Engineering
Degree in Civil Engineering
Degree in Electronic, Robotics and Mechatronics Engineering
Degree in Industrial Organization Engineering
Degree in Energy Engineering
Degree in Industrial Technologies Engineering
Degree in Telecommunication Technologies Engineering
Degrees in the Department of Natural Sciences
Double Degree in Computer Engineering and Mathematics
Degree in Industrial Electronic Engineering
Degree in Chemical Engineering
Degree in Biology
Degree in Biochemistry
Degree in Biotechnology
Degree in Statistics
Degree in Physics
Degree in Geology
Degree in Mathematics
Degree in Chemistry
Degree in Optics and Optometry

Table A.4: Short-term and log-term migration premia relative to no-migration

	3 years after		10 years after	
	ST vs Stay.	LT vs Stay	ST vs Stay	LT vs Stay
	Panel A. Minimum full-time earnings			
Average	0.29***	0.32***	0.13***	0.31***+++
Median	0.20	0.25	0.06	0.20
Standard Deviation	0.41	0.42	0.23	0.40
	Panel B. Full-time employment			
Average	0.47***	0.49***	0.06***	0.13***+++
Median	0.14	0.14	0.00	0.05
Standard Deviation	1.21	1.33	0.44	0.50
	Panel C. Part-time employment			
Average	-0.03	-0.04*	0.14***	0.09
Median	0.00	0.00	-0.00	-0.00
Standard Deviation	0.60	0.59	0.91	1.14
	Panel D. Unemployed			
Average	-0.28***	-0.25***	0.01	-0.18*
Median	-0.40	-0.50	0.00	-0.50
Standard Deviation	0.68	1.04	1.25	1.97
	Panel E. Minimum earnings (weighted earnings)			
Average	0.65***	0.69***	0.19***+++	0.44 ***+++
Median	0.33	0.37	0.09	0.28
Standard Deviation	1.28	1.27	0.72	0.67
	Panel F. Good study-job match			
Average	0.41***	0.46***	0.09***	0.18***
Median	0.14	0.15	0.00	0.00
Standard Deviation	1.13	1.42	0.74	1.12

*** Means statistically significant at the 1% level

+++ Means of ST and LT premia statistically significant at the 1% level.

Table A.5: Location premia 3 and 10 years after

	Social Life		Enjoy Close
	3 years after	10 years after	3 years after
Average	-0.20***	-0.18***	-0.56***
Median	-0.23	-0.20	-0.62
Standard Deviation	0.47	0.48	0.44

*** Means statistically significant at the 1% level

Table A.6: Ex-ante premia from short-term migration and long-term migration relative to no-migration

	ST vs No-migration	LT vs No-migration
Unconditional earnings	37.26 [-2.89; 23.39; 93.82] (54.42)	53.02 [-2.03; 33.92; 127.06] (73.60)
Study-job match	20.91 [-15.13; 7.75; 57.63] (28.17)	29.69 [-15.83; 10.81; 77.28] (34.39)
Enjoy Social Life	-14.76 [-39.98; -15.55; 0] (23.91)	-22.24 [-56.63; -23.42; 0] (32.76)
Enjoy Being close	-35.02 [-61.18; -39.77; -8.74] (27.68)	-55.77 [-55.78; -62.5; -14.28] (44.10)

The first row of each outcome reports the mean of the distribution. 10th, 50th and 90th percentiles are reported in brackets and standard deviations in parenthesis.