"Graduate migration in Spain: the impact of the great recession on a low mobility country"

Raul Ramos and Vicente Royuela

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Institut de Recerca en Economia Aplicada Regional i Públic
Research Institute of Applied Economics

WEBSITE: www.ub-irea.com • CONTACT: irea@ub.edu

AQR

Grup de Recerca Anàlisi Quantitativa Regional
Regional Quantitative Analysis Research Group

WEBSITE: www.ub.edu/aqr/ • CONTACT: aqr@ub.edu

Universitat de Barcelona
Av. Diagonal, 690 • 08034 Barcelona

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Abstract

This work studies the impact that the Great Recession has had on the migration of graduates in Spain, a country with low international mobility for graduates but where push factors associated to the crisis have probably changed their mobility patterns. Our empirical analysis first adopts a macro approach by estimating a gravity model taking advantage of the recent publication of the IAB brain-drain data. This dataset covers information for 20 OECD destination countries by gender, country of origin and educational level, for the period 1980-2010. Next, we use individual data from different surveys addressed to Catalan graduates and recent Ph.D. holders carried out by AQU in order to provide new evidence on the drivers and impacts of changing trends in their migration behaviour. Our hypothesis is that internal mobility has been replaced by international migration for recent graduates for two reasons: first, due to the generalized increased in unemployment across the whole country (push factor), and second, due to the better skill and educational matches in other European labour markets (pull factor) than in the Spanish one, where the incidence of overeducation is among the highest of OECD countries.

Raul Ramos: AQR Research Group-IREA. University of Barcelona, Av. Diagonal 690, 08034 Barcelona, Spain. E-mail: rramos@ub.edu

Vicente Royuela: AQR Research Group-IREA. University of Barcelona, Av. Diagonal 690,08034 Barcelona, Spain. E-mail: vroyuela@ub.edu

1. Introduction

Between 1995 and 2007, the proportion of foreign residents in Spain increased from 2% until 12%. In a few decades, Spain went from being a sender to a receiver country . The Great Recession, however, was a new turning point in the migration dynamics from and to Spain. The flow of immigrants reduced in a significant way and according to the Statistics of Residential Variations, the net external balance in the last years has been negative. From 2008, the emigration of Spaniards showed a clear upward trend, although this was still compensated by net inflows of foreigners until 2012. This changing trend is explained by two factors: first, the return migration of a proportion of the immigrants that arrived to Spain during the economic boom back to their countries of origin or to another European country; and second, by a new migratory wave of Spaniards who sought new opportunities in labour markets with better perspectives than that of Spain. The latter phenomenon has generated a situation of alarm and worry in the Spanish society due to the social and economic negative effects of the massive emigration of a generation of highly qualified youngsters, particularly from those regions with worse labour perspectives.

It must be acknowledged that available datasets have some limitations in providing an accurate picture of recent migratory flows of young people. The *Estadística de Migraciones* (Migration Statistics) analyses migration dynamics in Spain by providing annual information from 2008 onwards[1]. Data from this source is based on the residence variations of individuals according to municipal registers. In this sense, its main drawback is that, awhile immigrants arriving in Spain have benefits to inscribe such as access to public education and public health systems, emigrants do not have any incentive to delist from the register because there are potential benefits of remaining a registered resident. In fact, although Spaniards living abroad can communicate their change of residence to the Spanish consulate of the country of destination, it is not mandatory. Despite this limitation, statistics indicate that the number of emigrating Spaniards (Spanish who were born in Spain) increased from 34,427 in 2008 to 71,068 in 2013. In 2013, Spaniards emigrants represented a 13.4% of total outflows and less than 2‰ of Spaniard total population. The emigration rate in Spain, was over 11‰ in 2013 - a rate which overtook the previous highest record of 7.2‰ in 1964 (Izquierdo et al., 2014). Most emigration is due to foreign-born individuals

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[1] Migration Statistics of Spanish Institute of Statistics reports migration flows broken down by a list of characteristics (sex, year of birth, country of origin and destination, etc.). They maintain consistency with the Population Figures and the Vital Statistics of the country. This information is transmitted on an international level as official migration data for Spain. More details can be found at
http://www.ine.es/jaxi/menu.do?type=pcaxis&path=%2Ft20%2Fp277&file=inebase&L=1

returning to their country of origin. In 2013, 43% of total emigrants were aged between 15 and 34 years old. Izquierdo *et al.* (2014) extensively analysed these data and have found that for emigration is not still an option for Spaniards as the costs of migration are still very high due to the inexistence of networks that facilitate the job search in foreign countries. However, they have also found that Spaniards with higher educational levels show a greater propensity to emigrate than those with lower qualifications.

In this chapter, we extend on the analysis by Izquierdo *et al.* (2014) by concentrating our examination of the impact of the Great Recession in Spain on the international migration of graduates. To this end, we analyse two datasets with available information for university graduates. First, we take advantage of the recent publication of the IAB brain-drain data. We examine aggregate trends of the stock of Spanish migrants at 20 OECD destination countries by gender, country of origin and educational level, for the period 1980-2010. Second, we use individual data from surveys addressed to Catalan universities; one for graduates and another one for recent Ph.D. holders carried out by the Catalan University Quality Assurance Agency (AQU) in order to analyse the drivers in their migration behaviour. The chapter concludes summarising this empirical evidence.

2. Analysis of the stock of Spanish migrants in OECD countries by levels of education

In this section, we briefly review the aggregate trends of the Spanish migration by means of an analysis of the IAB brain-drain dataset developed by Brücker et al (2013).[2] This database on international migration includes information for 20 OECD destination countries for the years 1980-2010 (at 5 year intervals), for people aged 25 years and older by gender, country of origin and educational level. This database is built by merging national censuses and population registers from the 20 OECD receiving countries. The database considers migration according to country of birth rather than foreign citizenship as a significant number of people acquire citizenship particularly in countries such as United States, Canada, France, United Kingdom, Germany and Australia. The IAB brain-drain dataset reports data on the stock of immigrants in 20 OECD receiving countries coming from 195 countries.

As we have referred above, Spain has had very high emigration rates in recent years. Data from the World Bank Bilateral Migration Database[3] demonstrates that around 3 per cent of the world's population live outside their country of birth. In Spain, this figure has been much higher. In 1970, 2.4 million Spanish lived abroad, representing 6.7% of Spanish population. In the period from 1960 to 1985, about 80% of emigrants went to other European countries. For example, in 1980, the top two destination countries were France, with over 420,000 Spaniards, and Germany, with over 185,000 residents. In 1986, Spain joined the European Union which initiated a long path of economic growth and prosperity that positioned the country as a new immigration destination rather than an emigration source. In contrast to previous years, foreign-living Spanish in 2001 were just 1.1 million (2.6% of Spanish population), with 59% of the Spanish living abroad residing in one of the countries considered in the IAB database. According to the IAB database, the stock of Spanish emigrants in 2001 in the other 19 OECD countries included in the IAB brain-drain database was 25% lower than in 1980. For example, in 2010, about 240,000 Spaniards lived in France and 90,000 in Germany, figures substantially lower than those from 1980.

Despite the advantages the database brings, the global figures mask diverging trends for different groups of people. Yet as the data includes individuals aged 25 years and older, it
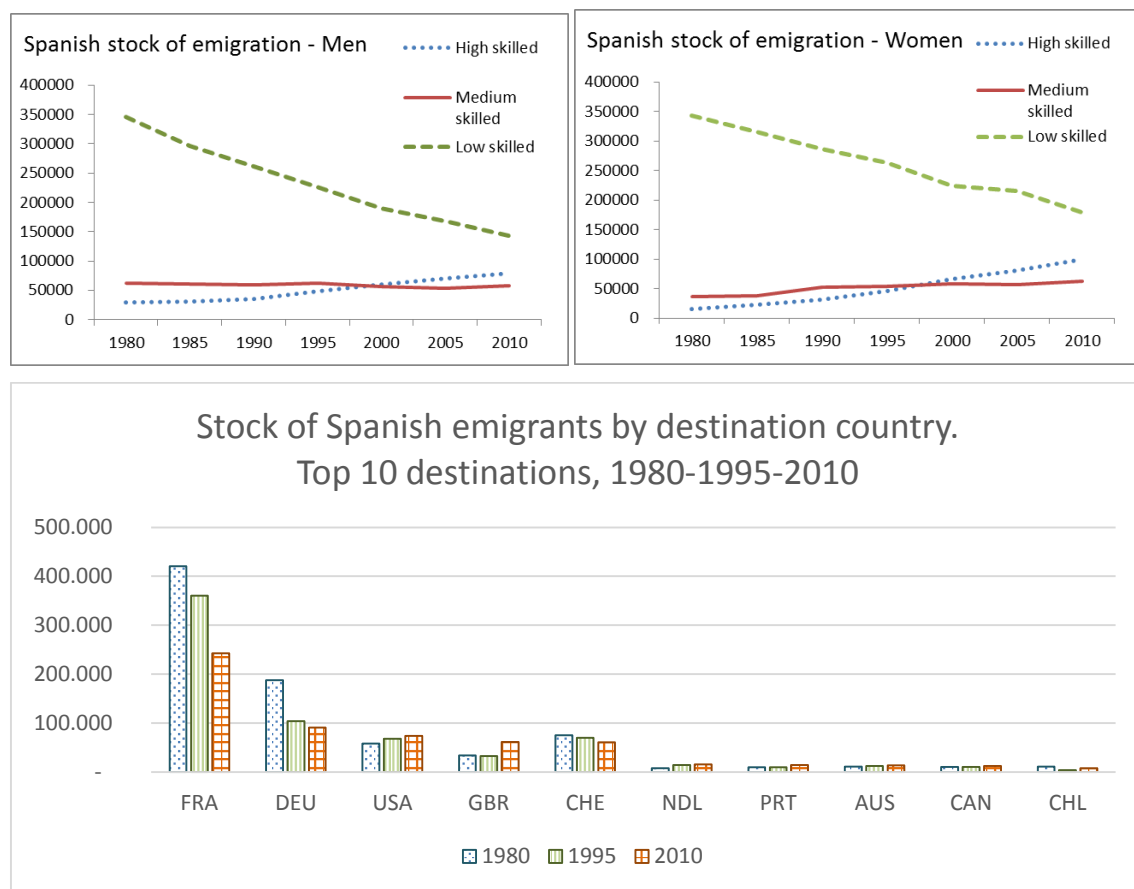
allows for comparisons of educational attainment figures between countries and in a number of other international migration databases. It considers three educational categories: low, medium and high skilled[4]. Figure 1 display the stock of Spanish migrants in 19 OECD countries by gender and educational categories and the total stocks by top destination country.

Figure 1. Stock of Spanish migrants in OECD countries by gender and educational levels

Source: Own elaboration from the IAB database.

As the country has converged towards the European Union averages with respect to social and economic terms, the total number of migrants has decreased. Nevertheless, this result has affected more the number of migrants with lower educational levels. The stock of medium skilled migrants has evolved cyclically, while rates of migration of high skilled

[4] Low skilled includes primary education: lower secondary, primary and no schooling. Medium skilled includes secondary education: high-school leaving certificate or equivalent. High skilled including tertiary education: higher than high-school leaving certificate or equivalent. No information on age cohorts is present in the database.

workers have soared, with annual increases over 3% for men and 6% for women. While in 1980 only 5% of the total stock of migrants could be labelled as high skilled, in 2010 that proportion rose to 29%. This increase has been particularly important in the United Kingdom, where in 1980 only 1,000 out of 33,000 Spaniards living in the UK (a mere 3.1%) were high skilled, while in 2010 35,000 out of 61,000 (57%) were high skilled. In fact, the UK is now the second destination for high skilled Spaniards, while in the 1980 this position was held by Germany. In contrast, the US has had a consistently higher number of Spanish high skilled migrants over the 1980-2010 period. In 1980 there were 12,500 high skilled Spaniards, while in 2010 this number sat at 43,000. In fact, during the whole considered period, it has been the preferred destination for high skilled Spaniards.

What are the factors that have driven the change in international migration and what are the relative impacts of these factors? And in particular, are these factors different for low, medium and high skilled? According to migration theory, migrants estimate the costs and benefits of moving to alternative locations and migrate to where the expected discounted net returns are greatest over some time horizon. This estimation includes not only the net expected earning but also the probability of finding a job. The empirical model is grounded on the random utility maximization theoretical model, based on differences in economic expectations between the origin and destination[5]. With this model, as applied in a vast empirical literature such as Beine *et al*. (2013), Bertoli *et al*. (2013), Izquierdo *et al*. (2014) and Royuela (2015), we seek to explain the log of emigrants as a function of the differential between origin (Spain) and destination (19 OECD countries) in terms of income and/or unemployment. In order to account for additional factors we include in the estimation country and time fixed effects:

$$\ln\left(m_{jt}\right) = \beta_1\left[ln\left(GDPpc_{jt-1}\right) - ln\left(GDPpc_{ESPt-1}\right)\right] + \beta_2\left[Unemp_{jt-1} - Unemp_{ESPt-1}\right]$$

$$+\delta_t + \theta_j + \varepsilon_{jt} \tag{1}$$

where the log of the stock of Spanish migrants in destination country *j* at time *t* depends on differentials between the origin (Spain) and destination countries, in terms of the income measured by means of the GDP per capita PPP-adjusted (constant 2011 international dollars) and on unemployment. We also include a list of dummy variables for every

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[5] For further details on the derivation of the empirical model from a theoretical framework, we recommend Beine *et al*. (2015).

destination (θ_j), which account for fixed country-specific characteristics such as distance from Spain, and year dummies (δ_t) that control for global cycles. These time dummies account for global shocks, including aspects in countries other than OECD destinations[6,7]. In order to avoid endogeneity problems associated with simultaneity bias, the explanatory variables are referred to the previous available period. For data availability, the estimation is referred only to three time points: 2000, 2005 and 2010, , three periods that cover the most recent cycle of the Spanish economy.

Table 1 displays the results. Two comments can be made from the estimates of these parsimonious models. First, we can see that Spanish migrants are sensitive to differentials in terms of income. The regressions for high and medium skilled migrants report significant parameters for income differentials. And second, the number of Spanish migrants is not sensitive to differentials in terms of unemployment rates. This result is only partially true, as the effect of the increase of unemployment in Spain as a result of the Great Recession is captured by the time dummy corresponding to 2010, which is highly significant. Yet this dummy is significant only for medium and high skilled levels with rates higher for the highly skilled and for women. We can also see that the adjustment of the models is far higher in the estimates for high skilled migrants, which might suggest that the responses of this group are more elastic to economic conditions in foreign destinations.

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[6] Even though most theoretical models use migration flows rather than stocks, Ortega and Peri (2009) and Grogger and Hanson (2011) use stocks by admitting that this "creates a tension with the underlying micro-foundations of the gravity model" (Beine et al., 2015, p. 16). By including country fixed effects included in the model we interpret the changes in the stock of migrants as the within variation in a panel model, what can be interpreted as net flows.

[7] All variables are extracted from World Bank database. http://data.worldbank.org/

Table 1. Migration estimates - Spanish stock of migrants. 2000-2005-2010

	Low Skilled		Medium Skilled		High Skilled	
	Men	Women	Men	Women	Men	Women
ln GDP pc	0.375	0.423	1.482***	1.535***	1.406*	1.187*
	(0.704)	(0.595)	(0.525)	(0.561)	(0.764)	(0.603)
Unemployment	-0.0228	-0.0262	0.0121	0.0202	-0.0141	0.00589
	(0.0237)	(0.0201)	(0.0177)	(0.0189)	(0.0257)	(0.0203)
δ_{2005}	0.161	0.255*	-0.000351	-0.0160	0.388**	0.283*
	(0.170)	(0.143)	(0.127)	(0.135)	(0.184)	(0.145)
δ_{2010}	0.325	0.432*	0.0994	0.0552	0.640*	0.497*
	(0.296)	(0.250)	(0.221)	(0.236)	(0.321)	(0.253)
Constant	6.268***	6.653***	6.120***	6.669***	5.916***	6.829***
	(0.305)	(0.258)	(0.227)	(0.243)	(0.330)	(0.261)
Country Dummies	YES	YES	YES	YES	YES	YES
Observations	57	57	57	57	57	57
R-squared	0.094	0.218	0.530	0.567	0.615	0.776
Countries	19	19	19	19	19	19

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

3. What affects migration decisions of Catalan recent university graduates and Ph.D. holders?

The previous analyses highlight that high skilled people have a differentiated migration pattern compared to the rest of the population, and that the push factors are most relevant in the most recent periods. In this section, we analyse the migration behaviour of high educated individuals in one Spanish region, Catalonia, by means of a sample of graduates. The Catalan University Quality Assurance Agency (AQU) and the Catalan universities jointly carried out surveys on early labour market outcomes of recent university graduates and Ph.D. holders. Specifically, we use information from the surveys carried out in 2008, 2011 and 2014 which collated responses from students who graduated four years before the survey year. Both surveys use a very similar questionnaire. Although there is no other similar survey for the rest of Spain, the conclusions from our analysis provide contribute further evidence to the findings shown in the previous section. According the 2011 Population Census, Catalonia represented 16% of total Spanish population, and according to the Migration Statistics, in that year 29% of total Spanish emigrants to other countries were Catalan residents. Consequently, even though these surveys are not representative of

the whole country, we can infer important trends of emigrants from this region can be extrapolated to Spanish emigrants more broadly.
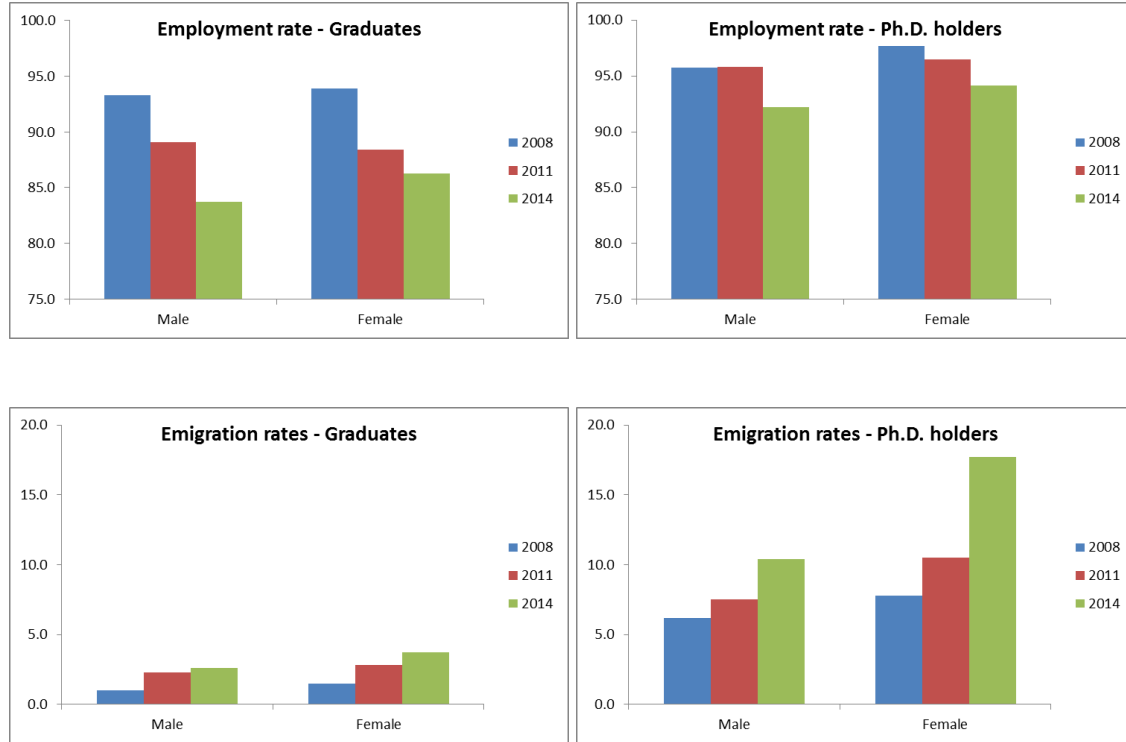
The sampling frame consisted of students born in Spain who completed a university degree or a Ph.D. in the Catalan public universities in the academic years 2004/2005, 2006/2007 and 2010/2011. Graduates were contacted four years after completing their studies and those who agreed to participate in the survey were interviewed using a Computer-Assisted Telephone Interview (CATI) system. Response rates demonstrated some variation, with around 50% of university graduates completing the survey, and between 60-70% of Ph.D. holders returning the survey. As these rates are relatively high, the non-response bias was not deemed to be a problem.

The sample size of the three cross section for the graduate sample is 43,530 observations and for the Ph.D. holders is 3,585.

The top panel of Figure 2 shows the employment rate of the three considered cohorts. It illustrates that nearly the 95% of graduates in the academic year 2004/2005 were employed in 2008, though this share has fallen by almost 10 points when we look at the employment situation of the cohort graduated in 2010/2011 in 2014. This trend is observed both for men and women and is in line with the general evolution of unemployment in Catalonia (and Spain) between 2008 and 2014. The situation for Ph.D. holders is similar, although employment rates are higher and have not been so severely affected by the crisis.

The bottom panel of Figure 2 shows the evolution of the emigration rate for the three cohorts of recent graduates and Ph.D. holders distinguishing by gender. It demonstrates that emigration rates are clearly higher for Ph.D. holders than for graduates, but the patterns of evolution have been similar between categories. Between 2008 and 2014, emigration rates have doubled. It should, however, be noted that due to potential non-response biases, these figures should be understood as conservative thresholds as the number of graduates and Ph.D. holders who have migrated to other countries could be even higher.

Figure 2. Employment rates and emigration rates of recent graduates and Ph.D. holders

Source: Own elaboration from AQU surveys.

The different waves of the survey provide detailed information on some individual characteristics that could help to identify the main factors behind international migration decisions. The literature on the topic proposes that migration choices are driven by individual expectations about the labour market in the destination country compared to the origin, but also to some extent by the personal characteristics that make individuals more prone to migrate (see Faggian *et al.*, 2006). Workers with higher levels of human capital (which can be proxied as better academic performance as per the work of Venhorst *et al.*, 2010) are more likely to migrate as their potential gains are usually higher than for less qualified workers. Moreover, they do not only value pecuniary factors but other variables such as a better match between their education and their job. After all, labour mobility is the human side of the agglomeration story: as stressed in the 2009 World Development Report, "an important insights of the agglomeration literature – that human capital earns

higher returns where it is plentiful – has been ignored by the literature of labour migration" (World Bank, 2009, p. 158).

Some other individual characteristics could also exert an influence in the migration decisions as they reduce the associated costs. Previous works, such as Parey and Waldinger (2011) and Di Pietro (2012), have found that previous migration experiences, like stays abroad during studies, have a positive influence in migration decisions as they provide individuals with language skills and further exposure to new cultures, both of which make a future migration experience more viable. Graduates in technical studies could also be more likely to migrate than graduates in other disciplines (de Grip *et al.*, 2010) as the international transferability of their knowledge and skills is usually larger, given the fact that the kind of skills usually required in the job place are less dependent on specific human capital (i.e, language knowledge).

To evaluate the relative contribution of these factors to explain migration decisions of recent graduates and Ph.D. holders in Catalonia, we have estimated a logit model on migration for the current job, four years after migration. Following Faggian *et al.* (2007), we estimated separate models for men and women. The list of explanatory variables for graduate decisions include age, the field of studies (with health studies as the base category), the average academic grade, plus two dummies capturing work experience while studying and mobility experience previous to graduation. For Ph.D. holders, information on work experience during studies and average grade are not included in the model as both variables do not vary between individuals. However, we include two additional variables of interest: first, we add a dummy variable that captures whether the Ph.D. dissertation was written in Catalan or Spanish instead of English and, second, we include a dummy variable related to the European Ph.D. distinction that allows an easier international recognition of the Ph.D. credentials. It is essential to note that in order to get a distinction, it is compulsory to carry out a research stay abroad. As a consequence, this variable is highly correlated with previous mobility experience. Finally, in both specifications we also engage dummy variables related to the period of analysis, taking as a reference the survey carried out in 2008.

Table 2 shows the results of estimating the logit models by maximum likelihood. As reflected in Netz and Jaksztat (2014), age has a negative effect on migration decisions. Graduates in experimental and technical sciences have a higher propensity to migrate when compared to health graduates (particularly for men), while the opposite result is observed

for graduates in social sciences. Regarding the effect of human capital as reflected in the average grade at graduation, the estimation results show that individuals with high grades in their studies more often migrate after graduation. As expected, the probability to migrate is also higher for those with previous mobility experiences. Language knowledge seems to be also relevant for the case of Ph.D. holders while the European distinction does not seem to affect migration decisions as coefficients are not statistically significant. Last, year dummies are positive and significant, a result that can be interpreted as evidence that the changing trend in migration decisions is not due to compositional changes of new cohorts, but to other economic underlying factors related to push and pull factors as seen in the previous section. In summary, the higher the educational level, the larger the impact of the Great Recession in the probability of migration.

4. Final remarks

Although the emigration rate from Spain is one of the highest on record, most Spanish emigrants are foreign-born and are returning to their country of origin. Still, the number of emigrating Spaniards has more than doubled from 2008 to 2013. Previous works have shown that people with higher educational levels show a greater propensity to emigrate than those with lower qualifications.

In this chapter, we analysed recent migration trends of university graduates in Spain. By means of a macro-approach using the IAB brain-drain database we identified that Spanish migrants are responsive to income differentials with other countries. In contrast, unemployment differentials between countries do not appear to be important factors, but rather the Great Recession in Spain acts as a push factor and may be a contributing factor for the number of highly skilled Spanish emigrants.

As a smaller case study, we followed a micro perspective analysing migration decisions of three waves of a survey of Spanish graduates and Ph.D. holders in Catalan universities. Results show that people with higher grades in their studies are more prone to migrate after graduation. Previous mobility experiences and foreign language knowledge also impact positively migration decisions. Again, we have found that the higher the educational level, the larger the impact of the Great Recession in the probability of migration.

Table 2. Logit estimates of the choice to migrate of recent graduates and Ph.D. holders

Variables	Graduates		Ph.D. holders	
	Males	Females	Males	Females
Age	-0.0581***	-0.0825***	-0.136***	-0.116***
	(0.0152)	(0.0157)	(0.0367)	(0.0235)
Humanities	0.754***	0.0512	0.661*	-0.471
	(0.174)	(0.263)	(0.400)	(0.344)
Social Sciences	-0.293*	-0.462**	-0.240	-1.619***
	(0.161)	(0.222)	(0.481)	(0.484)
Experimental	0.346*	-0.450	0.835***	0.113
	(0.202)	(0.288)	(0.312)	(0.258)
Technical	0.577***	0.151	0.904**	-0.577**
	(0.189)	(0.210)	(0.372)	(0.288)
Average grade	0.224***	0.209**		
	(0.0840)	(0.0918)		
Work experience during studies	-0.162	0.00459		
	(0.103)	(0.111)		
Mobility experience during studies	1.385***	1.239***	0.688***	0.617***
	(0.106)	(0.106)	(0.232)	(0.190)
Dissertation in Catalan/Spanish			-0.536**	-0.394**
			(0.218)	(0.180)
European distinction Ph.D.			0.257	0.268
			(0.236)	(0.188)
2011 wave	0.700***	0.565***	0.572*	0.637***
	(0.146)	(0.154)	(0.302)	(0.233)
2014 wave	0.917***	0.904***	0.976***	1.282***
	(0.143)	(0.147)	(0.310)	(0.232)
Constant	-3.819***	-2.409***	0.955	1.454*
	(0.480)	(0.533)	(1.232)	(0.844)
Observations	21,504	14,746	1,658	1,751
Pseudo-R2	0.0961	0.0762	0.1389	0.1676
Log-likelihood	-1898.373	-1703.99	-411.224	-546.079

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: Own elaboration from AQU surveys.

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