

# THE EFFECT OF UNIVERSITY GRADUATES' INTERNATIONAL MOBILITY ON LABOUR OUTCOMES IN SPAIN

## *Abstract*

The Erasmus programme represents one of the most popular policy measures of the European Union among its citizens. The aim of this paper is to explore the causal effect of this mobility action on labour market outcomes and skills' development in Spain. In order to do so, this research exploits the Spanish University Students Employability Survey 2014 an employs and instrumental variables strategy, based on the supply of Erasmus scholarships by area of studies and region of residence, to address the potential endogeneity of the participation in the program. On the one hand, the empirical results suggest that studying abroad has a positive effect on the probability of becoming an entrepreneur, working in a foreign country and the formation of Information Communication and Communication skills. On the other hand, they do not reveal any significant impact of participating in this programme on the likelihood of employment and several working conditions.

**Keywords:** Mobility, Erasmus, labour market outcomes, employability, Spain.

## **1. Introduction**

During the last decade, Spain has been the European country in sending and hosting most students through the European Union (EU) Erasmus international university program (Ministry of Education and Vocational Training, 2019). The main aim of this paper is to study to what extent studying abroad is positively related to the improvement of labour outcomes. Particularly, this research pretends estimating the causal effect of university students' mobility on their future labour outcomes and skill development.

The main contribution of this paper consists in providing the first rigorous assessment on how the Erasmus exchange programme works in Spain, particularly,

exploring its effects on the labour market outcomes of participants. To my knowledge, it is the first paper addressing this relevant topic for the Spanish case. Improving our knowledge of the relation between participation in the Erasmus programme and the future success in the labour market is especially relevant in the Spanish context, considering the performance of youth labour market in the country compared to other EU members.<sup>1</sup> Moreover, the evidence presented here contributes to enlarge our understanding on the overall functioning and impact of EU education mobility policies. This is an important point in order to build confidence in education policies among the Europeans. One of the most relevant goals of the European Commission (EC) is to accomplish higher standards regarding cultural and social integration and, in this respect, the Erasmus programme means a cornerstone in this approach from the point of view of EU authorities.

One of the crucial challenges in analysing the relationship between studying abroad and labour outcomes is disentangling the causality between mobility and its results in terms of labour market outcomes. The participation in international mobility programmes is very likely to be non-random and determined by factors also affecting the labour performance of students. This poses an endogeneity problem—particularly due to omitted variables—resulting in inconsistent estimates of the impact of participation on the main indicators of performance in the labour market. In line with previous works in this topic (e.g., Parey & Waldinger, 2011), this research addresses this issue relying on an Instrumental Variables (IVs) strategy, exploiting the variation in Erasmus grants by field and region. The main findings of this work suggest a positive effect of participation in the Erasmus programme on the probability of working abroad, becoming an

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<sup>1</sup>According to Eurostat (2019), the unemployment rate among workers with college education aged between 20 and 24 years old and 25 and 29 years old in Spain were 16.5 and 29.5% in 2017, respectively, well above the same rates at the EU level (7.2 and 12.1%) or the national unemployment rate of workers with tertiary education (10%). The magnitude of overeducation among recent graduates is also a matter of concern in Spain when compared to other European countries (Barone & Ortiz, 2011).

entrepreneur or ICT skills formation but no relevant impact on the likelihood of employment, occupational attainment or getting an open-ended contract.

This study comprises four major sections that follow this introduction. The next one presents a brief review of the theoretical and empirical literature dealing with the topic, while section three describes the main databases used in the analysis and presents the methodology employed in detail. The fourth section presents the main descriptive and empirical results of the analysis performed. Finally, the last section outlines the major conclusions of the paper.

## **2. Background and previous literature.**

As is well known, two major contributions produced a turning point in the economic analysis of education in the 1960s. Schultz (1962) recognized the significant role of education on both skill and knowledge development and, subsequently, Becker (1962; 1994) emphasized the importance of education not only as a consumer good but also as an investment. Both authors developed the Human Capital Theory, a general framework according to which the amount of education acquired critically depends on the assessed economic costs of such a process and the benefits derived from that decision. Later, Sicherman and Galor (1990) developed the Career Mobility Theory, asserting the existence of a positive relation between mobility and labour outcomes (Waibel *et al.*, 2017).

Recent literature regarding this issue considers that student international mobility has a positive impact on labour outcomes and skills' development. Some clear examples showing the positive impact of mobility programmes are the articles by Messer and Wolter (2007) and Rodrigues (2013) where it is shown how participating in a mobility programme has positive effects on the wages of individuals. Overall, international mobility would increase the productivity of the workers by raising their human capital

level, mostly due to general training and the development of soft skills. For example, Doorbar (2003) argues that human resources departments consider participation in mobility programs as an important element for improving interpersonal skills. In the same line, Burbules and Torres (2013) argue that employers attribute greater value to an overseas education since it has important implications in terms of exposure to different people, cultures, ideas, attitudes, and varied ways of learning and working (Matherly, 2005; Salisbury *et al*, 2009; Wirs-Jenssen, 2010; Rowson *et al*, 2012; Rodrigues, 2012; Iriondo, 2019).

Several other articles abound in the positive impact of participation in educational mobility programs on labour market outcomes, although most of them face important limitations regarding the difficulties to assert the direction of the causal relation; i.e. controlling for the potential endogeneity associated with studying abroad (Orahood, Kruze, and Pearson, 2004; Fielden, Middlehurst, and Woodfield, 2007; King, Findlay, and Ahrens, 2010). This problem is shared by papers arriving at the opposite conclusion, such as those by Wiers-Jenssen, (2008) or Saarikallio-Torp and Wiers-Jenssen, (2010). In order to solve this problem, this study follows a strategy similar to the approach taken by Parey and Waldinger (2011) and Di Pietro (2012, 2015), addressing endogeneity by employing the instrumental variable methodology explained in the following section.

As showed above, the concern about the relation between educational international mobility and labour outcomes is far from a new one. Since the creation of the Erasmus program in 1987 (Council Decision of 15 June 1987, 1987), many experts have tried to explore the impact of this programme on labour outcomes, overall, as mentioned above, pointing out positive effects of participation in this initiative. Furthermore, from a different perspective, the EC publishes reports about the impact that

European mobility programmes has for the European citizens since 2013.<sup>2</sup>The approach of these evaluation reports of the EC, which often depicts large positive effects of the EU initiative of student international mobility, are of a descriptive nature and obviate the endogenous nature of the participation in programmes like the Erasmus.

With its entry in the EU in 1986, Spain engaged enthusiastically in the Erasmus programme, which started the following year of its accession. Figure 1 shows the evolution in the number of Spanish university students who participated in the Erasmus program. In the first year of the Erasmus programme, ninety-four Spanish university students took part in the exchange scheme. Currently, Spain has become the major sender and host of students within the Erasmus framework and roughly 40,000 graduates studied one or two semesters abroad in the academic course 2014–2015.

According to the *Erasmus Impact Study Regional Analysis* (EC, 2016), Spain is one of the countries where these mobility programs have most positive effects on labour market outcomes and personal skills development of participants. This comparative report states in its conclusions that Western European ERASMUS students gain significant advantages in terms of skills and abilities which are then taken into consideration in their future jobs. It states that being a beneficiary of the Erasmus programme is an important signal for Spanish students in the labour market, especially in an environment where social skills and language skills are highly valued.

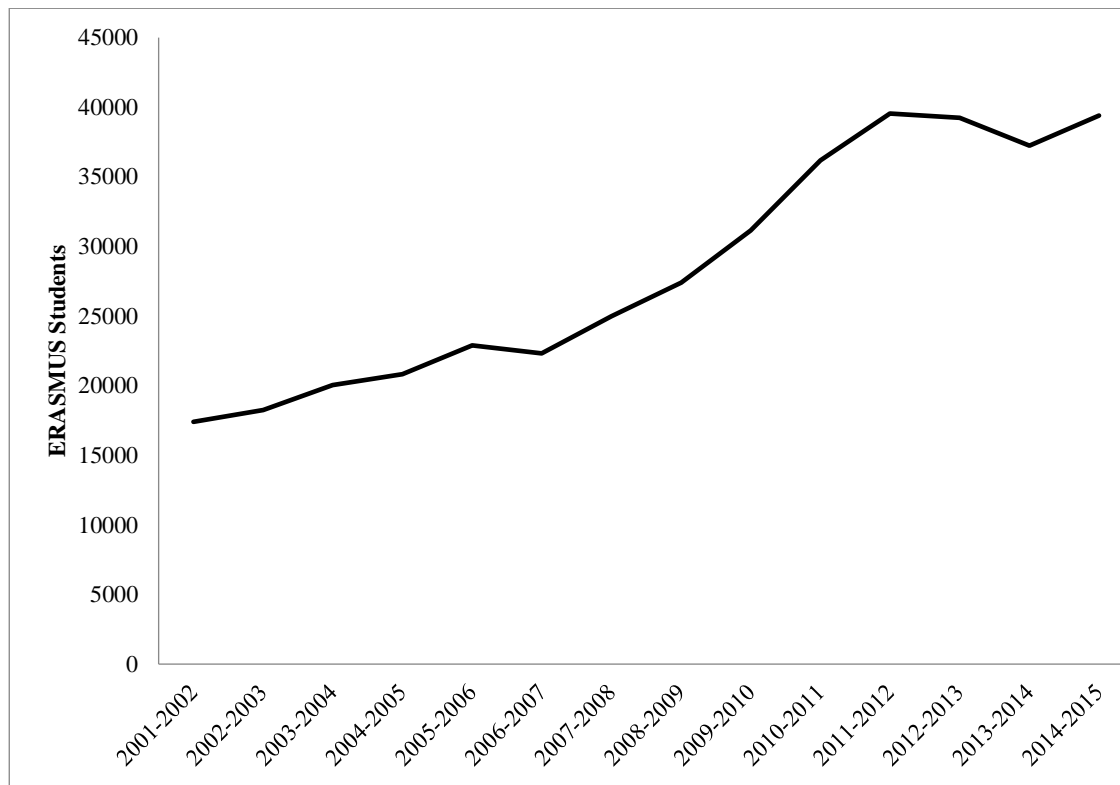
In the same way, this report points that financial issues constitute a major restriction for the participation in the programme for many students. Nonetheless, Spain continues leading the list of most attractive destination countries for university students and also is the state sending more graduates abroad through this programme. In Southern Europe, one of the main reasons for joining the programme is the opportunity of

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<sup>2</sup>See, for instance, the last available report, from year 2016 (European Commission, 2017).

improving foreign language proficiency and enhance future employability abroad. In this respect, the bad performance of the youth Spanish labour market might be a driver of the increasing trend in the number of Spanish students participating in the Erasmus programme. However, some previous literature remarks that transnational education plays an important role to improve students' curriculum (Bourn and Neal, 2008; Chan, 2011).

Figure 1. Number of Erasmus students from 2001 to 2015 in Spain.



Source: Author's analysis from Ministry of Education and Vocational Training (2019).

### 3. Data and methodology

#### 3.1. Data

The primary data source used on this paper is the University Students Employability Survey 2014 (Encuesta de Inserción Laboral de los Estudiantes Universitarios, EILU). This database, developed by the Spanish Statistical Office (Instituto Nacional de Estadística), provides data for 30,000 students of all Spanish universities. The students included on this survey have obtained their university degrees in 2009–2010. The main strength of this database is that it contains information on both the participation of the interviewed individuals in international mobility programmes and labour market outcomes. Additionally, it includes some background questions on the individuals, their majors and their universities in Spain. The final sample of the EILU after data filtering and cleaning comprises a final sample of 28,554 graduates.

### 3.2. Empirical strategy

In order to explore the causal effect of studying abroad on labour outcomes, the equation of interest to estimate is the following one:

$$Y_i = \beta_1 + \beta_2 Erasmus_i + \beta_3 X_i + u_i \quad (1)$$

Where  $Y_i$  denotes the dependent variable of interest, a labour outcome or skill formation;  $Erasmus_i$ , a treatment binary variable indicating whether the student has participated or not in an Erasmus programme during his studies;  $X_i$  is a vector of control covariates of personal and socio-economic characteristics and  $u_i$ , the disturbance.  $\beta_2$  is the coefficient of primary interest in this study, which measures the effect of participation in the mobility programme on the outcome of interest. The left-hand-side variables considered, taking into account the information contained in the EILU, are the following ones: being employed, having been ever employed after finishing higher education, being working abroad, having had his first job abroad, being an proficient user of ICTs (*versus* an advanced or a beginner user), being working with a permanent contract, being a high-skilled white-collar worker and currently being self-employed (which we consider as a proxy for entrepreneurship). Control covariates include sex, age, if the Spanish university where the student carried out his major was private, the region where the higher education institution was and the major field of study.

Actually, there are many potential omitted variables that might affect both the enrollment in international student mobility schemes and labour market outcomes. Factors like language proficiency, family liquidity constraints, academic performance, ability and motivation levels or other personality traits could potentially play this role. In this case, the disturbance and the Erasmus variable would be correlated, so the use of Ordinary Least Squares (OLS) would yield inconsistent estimates of  $\beta_2$ . In principle, if there is a positive selection into the participation in the Erasmus programme, the OLS



estimates would be upward biased. Nevertheless, the relevant number of potential omitted variables, the consideration of several outcomes and our overall acknowledgment on the determinants of selection into the Erasmus programme in Spain make us to be cautious about determining the *ex-ante* direction of the bias of OLS.

In order to address this endogeneity problem, we resort to an IV approach based on previous papers in this topic (Parey & Waldinger, 2011; Di Pietro, 2012, 2015). Our IV tries to capture the exposure to the Erasmus programme experienced by each student. Our instrument consists in the proportion of students in a certain field of study and region who participated in the programme in the academic course 2009–2010. We build this variable using external information from Spanish Service for the Internationalization of Education (Ministry of Education and Vocational Training), which provided us the total number of total individuals who participate in Erasmus programmes by discipline, home university and academic year, which we combined with the total volume of students by university, obtained from public statistics of the same Ministry. Given that it is very likely that the demand by university students couples the supply of Erasmus slots by Spanish universities, our IV is a reasonable proxy for the proportion of Erasmus grants supplied by each university.<sup>3</sup> This should mitigate potential concerns due to the so-called reflection problem (Manski, 1993). Although we can build our IV at the field of study-university level, unfortunately, in our database, because of confidentiality reasons, the EILU only allows distinguishing the region where the higher education institution. Therefore, we

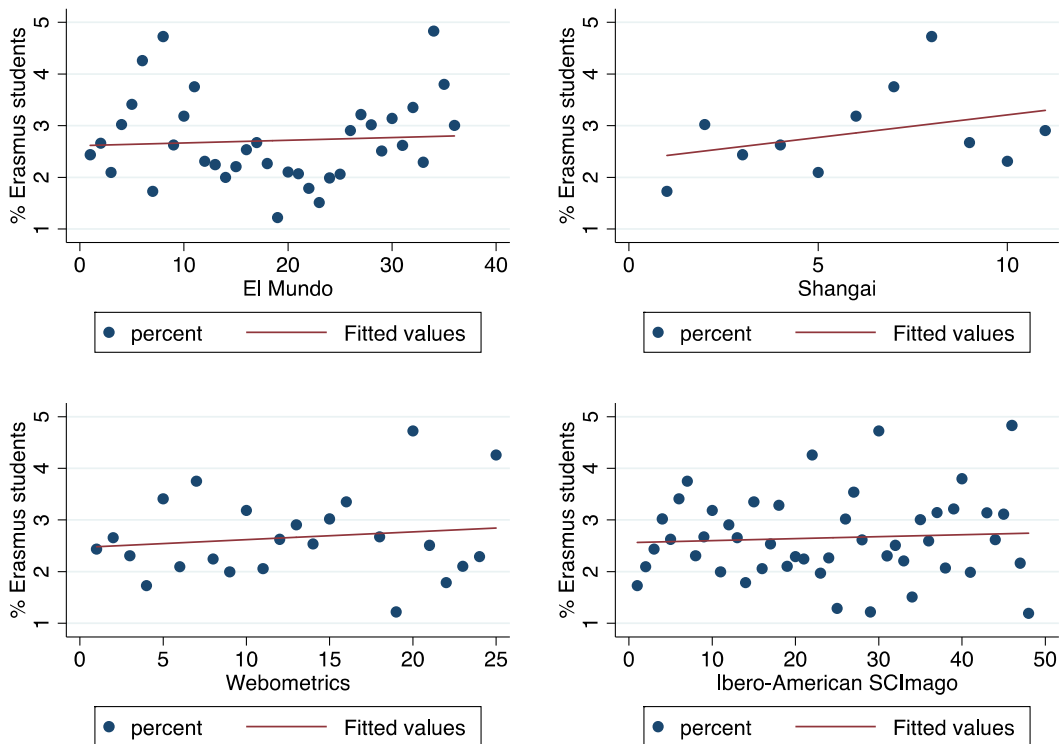
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<sup>3</sup>Unfortunately, we do not have information about the actual supply of Erasmus positions across all the Spanish universities, as competences are decentralized at the Faculty level. Therefore, we resort to personal communications with the International Relations Service of our university (University of Salamanca). This institution is the oldest Higher Education centre in the country and it was the 18<sup>th</sup> Spanish university (out of more than 200 centres) with more students participating in the Erasmus programme in the academic course 2009–2010 (Spanish Service for the Internationalization of Education, 2019). The International Relations Service of our centre indicated that the demand for slots in the programme exceeded the supply on a regular basis at this institution. Particularly, they state that universities carry out several rounds of allocations, trying to match students' preferences and available destinations. Those positions not covered in the first round are often covered in the second. Even if not totally conclusive, this figure favours our interpretation on how our IV captures the supply and, therefore, the exposure to the programme.

have to collapse the information of SEPIE at the same level as the EILU, so our IV—which we call *Erasmus exposure* hereafter—varies at the field of study-region level.

There can be still potential concerns about the exogeneity of our IV. Particularly, the availability of Erasmus positions might be correlated with the quality of the education or the employability due to the home institution or region and, therefore, it could affect directly labour market outcomes. In order to address these issues, we proceed in several ways. Firstly, as stated above, the control covariates in equation (1) comprises region and major field of study and region fixed-effects. Nevertheless, it is possible that there are combinations of disciplines and geographical locations with a specific impact on labour market outcomes. For instance, this should be the case if we observe that the propensity to send students abroad within the Erasmus programme is positively correlated with the quality of higher education institutions. In order to further explore this potential threat to the validity of our instrument, we assess the relationship between Erasmus exposure at the university level and the quality of the institution measured through four rankings (Figure 2).

Figure 2. Relationship between the percentage of Erasmus students and their ranking position in academic course 2009–2010.



*Notes:*

El Mundo: ranking of undergraduate programmes elaborated by the daily Spanish newspaper *El Mundo* (<https://www.elmundo.es/especiales/ranking-universidades/index.html>).

Shanghai: The Shanghai Ranking of World Universities (<http://www.shanghairanking.com>).

Web: Webometrics ranking elaborated by the Spanish National Research Council (<http://www.webometrics.info>).

Ibero: The Ibero-American SCImago Institutions Ranking (<https://www.scimagoir.com>).

*Source:* Author's analysis from rankings and data from the SEPIE.

The correlation is very low in three out of four cases and, in the case of the Shanghai ranking, where the relationship seems stronger, there are only 11 universities included (given the bad performance of Spanish higher education institutions according to this tool), a result that is far from conclusive (and statistically not significant). Spearman and Kendall rank correlation coefficients (Table 1) convey exactly the same information as the graph: it is hard to sustain the existence of a systematic relationship between quality and supply of Erasmus positions.

Table 1. Spearman and Kendall rank correlations between the percentage of Erasmus students and their ranking position in the academic course 2009–2010.

	El Mundo	Shanghai	Webometrics	SIR Iberoamericano
Spearman correlation coefficient	0.070 (36)	0.327 (11)	0.080 (24)	0.017 (47)
Kendall correlation coefficient	0.047 (36)	0.272 (11)	0.050 (24)	0.015 (47)

*Notes:*\*\*\* significant at 1% level; \*\* significant at 5% level; \* significant at 10% level. No. of observations between parentheses. See notes of Figure 2.

*Source:* Author's analysis from rankings and data from the SEPIE.

Finally, in order to reinforce the validity of our identification strategy and given that we cannot include field of study-region fixed-effects (as it is the level of variation of our IV and the database is cross-sectional), we include an additional control aiming to capture the quality of education at the field of study-region level based on rankings. In this respect, we resort to the classification elaborated by the daily newspaper *El Mundo* (50 carreras. Curso 2009/2010, 2009). This is the only ranking allowing differentiation among fields of study, which is an essential feature in order to ensure that our IV keep enough degrees of freedom. Particularly, this ranking identifies the top 5 undergraduate programmes in Spain by field of study. The classification is based on the responses of academics all over the country, university statistics on supply, demand, resources and results (e.g., completion and dropout rates) and external information (e.g., position of the university in international rankings and the National Agency for Quality Assessment and Accreditation of Spain). Given the characteristics of the ranking, we include it through a dummy variable that takes the value 1 if there is a university in the region and field of study in the top 5 of the ranking and 0 otherwise. The consideration of this additional control has no influence on the results.

When using IVs, we estimate equation (1) using 2-Stage Least Squares (2SLS). We prefer employing OLS and 2SLS over non-linear alternatives (i.e., *probit* or *logit* models) in order to privilege consistency over efficiency, as suggested by Angrist and Pischke (2008). Linear models ensure consistency as long as the disturbance and the covariates are not correlated, not requiring any additional assumption about the functional form of the error term. As a robustness check, we repeat the estimations without controlling for our ranking measure and estimate *IV-probit* models. Annex I displays the results of these exercises (Angrist & Krueger, 2001).

## **4. Results.**

### 4.1. Summary statistics

Table 1 shows the main descriptive statistics of the variables and the instrument of the sample used in the analysis. The number of students who participated in the Erasmus exchange programme according to the sample is 2,394 compared to 26,160 that stayed at their home universities. This preliminary exploration allows observing systematic differences among graduates depending on whether they to participate or not in the Erasmus programme in both their personal characteristics and labour factors. These differences in observable characteristics strongly suggests that the process of selection into the Erasmus programme is not random and that OLS will yield inconsistent estimate in the presence of unobserved heterogeneity.

Table 2. Summary statistics

	Erasmus students	No Erasmus students	Total students	Difference in means [Standard error]
	Mean (Standard deviations)	Mean (Standard deviations)	Mean (Standard deviations)	
Exposure to Erasmus	0.033 (0.029)	0.025 (0.022)	0.025 (0.023)	-0.010*** [0.001]
Currently employed	0.790 (0.406)	0.750 (0.432)	0.754 (0.430)	-0.040*** [0.008]
Currently employed abroad	0.127 (0.333)	0.048 (0.214)	0.054 (0.227)	-0.079*** [0.007]
Have worked after graduation	0.959 (0.196)	0.945 (0.227)	0.946 (0.224)	-0.014*** [0.004]
Have had his first job abroad	0.198 (0.399)	0.096 (0.295)	0.105 (0.307)	-0.101*** [0.008]
Permanent contract	0.337 (0.472)	0.315 (0.464)	0.317 (0.465)	-0.021*** [0.010]
High-skilled white-collar occupation	0.643 (0.479)	0.574 (0.494)	0.580 (0.493)	-0.068*** [0.010]
Entrepreneur	0.079 (0.270)	0.074 (0.262)	0.074 (0.263)	-0.005 [0.005]
Expert ICTs skills	0.195 (0.396)	0.147 (0.354)	0.151 (0.358)	-0.048*** [0.008]
Female	0.561 (0.496)	0.606 (0.488)	0.603 (0.489)	0.045*** [0.010]
From 30 to 34 years old	0.283 (0.450)	0.249 (0.432)	0.251 (0.434)	-0.034*** [0.009]
More than 34 years old	0.021 (0.144)	0.157 (0.363)	0.145 (0.352)	0.135*** [0.003]
Private university	0.058 (0.235)	0.156 (0.362)	0.147 (0.354)	0.097*** [0.005]
Enrolled in a Spanish top 5	0.753 (0.431)	0.740 (0.438)	0.741 (0.437)	-0.012 [0.009]
No. of observations	2,394	26,160	28,554	

*Notes:* Observations are weighted using sampling probability weights. \*\*\* significant at 1% level; \*\* significant at 5% level; \* significant at 10% level.

*Source:* Author's analysis from EILU 2014.

## 4.2. Econometric results

Table 3 displays the results of the first-stage equation of the 2SLS. The coefficient of the instrument is statistically significant different from zero at the 1% level and shows the

right sign (positive). On average, an increase in the number of Erasmus positions of 1 percent points in the field of study and region increases the probability of participating in the programme in 0.4 percent points. The F-statistics of the first stage is above 10, which indicates that our instrument is relevant.

Table 3. Results first-stage regression

	Coefficients (standard errors)
Exposure to Erasmus	0.374 *** (0.099)
Female	-0.006 (0.005)
From 30 to 34 years old	-0.012 (0.005)
More than 34 years old	-0.083*** (0.007)
Private university	-0.034*** (0.005)
Enrolled in a Spanish top 5	0.001 (0.005)
Wald F-statistic (1 <sup>st</sup> stage)	14.24
R <sup>2</sup>	0.039
Mean of the dependent variable	0.083
Mean of the independent variable	0.025
No. of observations	27,643

*Notes:* \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Standard errors clustered at the field of study-region level between parenthesis. All specifications include field of study and region fixed-effects. The reference category is a male, aged less than 30 years old, having attended a public university and not enrolled in a top 5 programme.

*Source:* Author's analysis from EILU 2014.

Table 4 and Table 5 cover the main results of our econometric analysis and include both the OLS and 2SLS estimates. Overall, OLS estimates are statistically different from zero at conventional significance levels and suggest a positive correlation between Erasmus participation and the set of outcomes of interest. Unsurprisingly, IV estimates are overall quite imprecise and standard errors are large, given that the first-stage Wald F-statistic is not spectacularly high (even though it is above 10). The high likelihood of

endogeneity (supported by relevant differences in the small set of observable covariates) advice to privilege IVs over OLS, focusing on those cases where both set of estimates yield similar evidence. Particularly, 2SLS supports the existence of a positive impact of participating in the Erasmus programme on the probability of being employed abroad at the time of the interview, the probability of having had the first job abroad, the probability of being self-employed and the probability of being an expert ICTs user. These estimates, though much more imprecise, goes in the same direction as OLS results. In the rest of the cases, IV models yield not significant effects on the outcomes of interest.



Table 4. Effects of the Erasmus mobility programme on labour market outcomes and skills (I)

	Currently employed		Currently employed abroad		Have worked after graduation		Have had his first job abroad	
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Erasmus programme	0.064*** (0.011)	0.007 (0.336)	0.068*** (0.009)	0.696** (0.289)	0.023*** (0.005)	0.205 (0.177)	0.081*** (0.011)	0.692*** (0.215)
Female	-0.017** (0.007)	0.018** (0.008)	0.015*** (0.004)	0.012** (0.005)	0.004 (0.004)	0.005 (0.004)	0.009* (0.005)	-0.005 (0.007)
From 30 to 34 years old	0.014* (0.007)	0.013 (0.009)	0.018*** (0.004)	-0.010 (0.007)	0.023*** (0.003)	0.025*** (0.005)	0.041*** (0.005)	0.034*** (0.008)
More than 34 years old	0.043*** (0.009)	0.038 (0.032)	0.044*** (0.004)	0.008 (0.028)	0.002 (0.005)	0.017 (0.016)	0.043*** (0.006)	0.008 (0.022)
Private university	0.026*** (0.009)	0.024 (0.018)	0.004 (0.005)	0.027* (0.015)	0.010** (0.004)	0.017* (0.009)	-0.004 (0.006)	0.018 (0.011)
Top-five	0.016 (0.010)	0.016 (0.011)	0.009* (0.005)	0.008 (0.005)	0.926*** (0.007)	0.907*** (0.021)	0.131*** (0.010)	0.065** (0.027)
Wald F-statistic (1 <sup>st</sup> stage)	-	14.24	-	14.24	-	14.24	-	14.24
R <sup>2</sup>	0.032	-	0.028	-	0.018	-	0.028	-
Mean of the dependent variable	0.740		0.054		0.940		0.109	
Mean of the independent variable	0.083		0.083		0.083		0.083	
No. of observations	27,643		27,643		27,643		27,643	

Notes: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Standard errors clustered at the field of study-region level between parenthesis. All specifications include field of study and region fixed-effects. The reference category is a male, aged less than 30 years old, having attended a public university and not enrolled in a top 5 programme.

Source: Author's analysis from EILU 2014.

Table 5. Effects of the Erasmus mobility programme on labour market outcomes and skills (II)

	Have a permanent contract		Hold a high-skilled white-collar occupation		Entrepreneur		Expert ICTs skills	
	(IX)	(X)	(XI)	(XII)	(XIII)	(XIV)	(XV)	(XVI)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Erasmus programme	0.057*** (0.013)	0.135 (0.548)	0.111*** (0.012)	0.274 (0.600)	0.012* (0.007)	0.543* (0.288)	0.018* (0.010)	0.826*** (0.304)
Female	0.025*** (0.008)	0.025*** (0.009)	0.053*** (0.007)	-0.052*** (0.012)	0.027*** (0.004)	0.024*** (0.007)	0.133*** (0.005)	0.128*** (0.013)
From 30 to 34 years old	0.063*** (0.008)	0.064*** (0.011)	-0.010 (0.008)	-0.008 (0.016)	0.014*** (0.004)	0.021*** (0.006)	0.004 (0.006)	0.015* (0.009)
More than 34 years old	0.182*** (0.011)	0.188*** (0.053)	0.021* (0.010)	0.034 (0.055)	0.043*** (0.006)	0.088*** (0.026)	-0.015** (0.007)	0.053** (0.026)
Private university	0.012 (0.011)	0.016 (0.034)	0.086*** (0.010)	0.092*** (0.032)	0.054*** (0.007)	0.073*** (0.017)	-0.002 (0.007)	0.026 (0.020)
Top-five	0.017 (0.010)	0.017 (0.016)	0.020* (0.012)	0.019 (0.017)	-0.007 (0.005)	-0.007 (0.006)	-0.007 (0.007)	-0.008 (0.007)
Wald F-statistic (1 <sup>st</sup> stage)	-	14.24	-	14.24	-	14.24	-	14.24
R <sup>2</sup>	0.060	-	0.111	-	0.028	-	0.271	-
Mean of the dependent variable	0.300		0.577		0.072		0.150	
Mean of the independent variable	0.083		0.083		0.083		0.083	
No. of observations	27,643		27,643		27,643		27,643	

Notes: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Standard errors clustered at the field of study-region level between parenthesis. All specifications include field of study and region fixed-effects. The reference category is a male, aged less than 30 years old, having attended a public university and not enrolled in a top 5 programme.

Source: Author's analysis from EILU 2014.

Overall, our results are in line with those reported by previous works. For instance, the positive effect on international labour mobility appears also in studies for Germany (Parey & Waldinger, 2011) and Italy (Di Pietro, 2012; 2015). Second, we can observe the presence of a causal and positive impact of participating in Erasmus programmes on being an entrepreneur. The Theory of Planned Behaviour developed by Ajzen (1991) shows

that human intentions or behaviours are influenced by their attitude and belief. Subsequent studies based on this theory argue that relational support and the role of educators and policy makers are also decisive for the entrepreneurial intention. These means that educational policies, such as the Erasmus mobility programme, play a crucial role to foster and promote the entrepreneurial intention among graduates (Yusof et al. 2007; Wu and Wu, 2008).

There are different conjectures that might help to explain the absence of solid positive effects on variables like employment, type of contract or occupation. Several reasons are available to address this issue. First, mobile students can be positively selected into the programmes. It is possible that students with better foreign language proficiency, more advantaged family backgrounds, better academic results or higher motivation or more developed non-cognitive abilities are more likely to participate in the programmes of mobility. In fact, there is some evidence that financial constraints are a serious factor affecting the participation of Spanish students in the programme. According to Otero (2008) the students who benefit from the Erasmus programme are those who come from well-off family backgrounds. Likewise, Di Pietro (2015) and Kratz and Netz (2016), affirm that they come from families in which the parents have a university education. A second explanation of our results are due to the sort of skills developed and knowledge acquired during the period of study abroad. According to Brooks and Waters (2010) and Llewellyn-Smith and McCabe (2008), many students decide study abroad because they seek adventure and excitement and they are not looking for an improvement in terms of skills or knowledges. This motive somehow shows in the fact that, often, Spanish students do not choose their host universities considering their quality or reputation, but for other reasons. Comparing the main destinations of Spanish students with the reputation of higher education systems, it seems that the quality of institutions does not represent and

important driver of the choices of Spaniards (Table 6). For instance, the country receiving most Spanish exchange students (almost one fourth of all Erasmus from Spain) is Italy. In the third place, some intrinsic characteristic of the Spanish labour market can shed additional light on our results. First of all, having a university degree continues offering the highest chances of getting a job for young people. At the same time, temporary contracts are the most common entry door to the Spanish labour market. Given the relevance of informal networks in job search, to study the last year of the undergraduate studies abroad might have a negative effect on the job search that compensates the eventual positive impact of the academic experience in a foreign country. Moreover, working in a foreign EU country can induce the elevation of participants' reservation wages through higher expectations. Given the mixed effects reported here, it seems particularly interesting to assess the impact of participation in the programme on the middle and long term.

Table 6. Ranking of university education and Spanish Erasmus destination countries (2010)

Destination country	Percentage of Erasmus students	Position in UNIVERSITAS 21 ranking
Sweden	3.4	1
Denmark	3.0	2
Finland	2.8	3
The Netherlands	4.0	4
United Kingdom	9.6	5
Norway	1.5	6
Austria	1.7	7
Belgium	5.2	8
Germany	10.2	9
Ireland	1.9	10

*Notes:* The ranking *UNIVERSITAS 21* only includes the first 25 countries classified according to the university educational level.

(-) Countries not included. \* European countries with some university included into the top-100 ranking carried out by the Academic Ranking of World Universities.

*Source:* Authors' from European Educational Programmes Statistics - Ministry of Education and Vocational Training and *UNIVERSITAS 21* statistics.

Last, in terms of skills' development, the results obtained show the existence of a significant and positive relation between studying abroad and ITCs skills. Countries such as Germany, Belgium, United Kingdom and the Netherlands are among the primary destinations for Spanish students. In this context, the Global Innovation Index considers these countries among the top regarding to technological and ITCs research development. This means that students who enjoy a mobility experience in these countries are more likely to acquire higher ITCs' skills than graduates who did not study abroad. Previous literature supports this theory since, according to Rodrigues (2013), mobility has a positive effect in terms of human capital and therefore students will choose destinations where training standards are high. Similarly, Iriando (2019) demonstrates the existence of positive effects of mobility on the wages of individuals, alluding to the country of destination as one of the main determinants, with Germany or the United Kingdom standing out among these countries. According to the existing literature on this topic, the study notes that transnational education in development of professional skills has significant implications for the curriculum.

## **5. Conclusions**

During the last three decades, a growing number of Spanish graduates have participated in the Erasmus international mobility programme sponsored by the EU. This paper has explored the causal effects of being part of this initiative on labour market outcomes and skill development. Using an IV strategy, we have found that participation in the Erasmus programme during university studies in Spain raises the probability of working abroad and having the first work experience in a foreign country, increases the likelihood of becoming a self-employed worker and the ICTs proficiency. Conversely, our analysis has

identified no relevant effect on the probability of employment or the probability of holding a permanent contract or a high-skilled white-collar occupation.

These results allow emphasizing the importance that international educational policies have on the labour market outcomes in later life. In conclusion, this analysis provides information about the presence of benefits in two different directions. First, it is important to highlight that Spanish students who choose to study abroad perceive this as an opportunity to train themselves for an international career. In doing so, the Erasmus programme help individuals in satisfying their own labour expectations. Second, countries which decide to attract talented students, have a good chance of doing so by means of a policy-making design that promoting the students' exchange opportunities. The Erasmus programme seems to be a good example of such programs.

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