



UNIVERSIDAD
COMPLUTENSE
MADRID

FACULTAD DE CIENCIAS ECONÓMICAS
Y EMPRESARIALES

Evaluation of the impact of Erasmus study mobility on salaries and employment of recent graduates in Spain*

Iñaki Iriondo Múgica

Working Papers / Documentos de Trabajo. ISSN: 2255-5471
DT CCEE-1704 (inglés). Noviembre 2017
[http://eprints.ucm.es/ 45839/](http://eprints.ucm.es/45839/)

* Acknowledgements: This work has benefited from a grant for financing of research projects of SantanderUniversidad Complutense de Madrid (PR 26/16 - 20327).

Aviso para autores y normas de estilo: <http://economicasyempresariales.ucm.es/working-papers-ccee>



[Esta obra está bajo una licencia de Creative Commons: Reconocimiento - No comercial.](http://creativecommons.org/licenses/by-nc/4.0/)

EVALUATION OF THE IMPACT OF ERASMUS STUDY MOBILITY ON SALARIES AND EMPLOYMENT OF RECENT GRADUATES IN SPAIN

Abstract

There is little empirical literature that evaluates the impact of the Erasmus program on the professional careers of university graduates. Sometimes the empirical evidence on the subject is partial or indirect. In addition, it is usually not taken into account that students who participate in mobility programs are different from their peers in terms of ability, socioeconomic background or field of study, so that we cannot state that the observed correlations are really causal.

We use propensity score matching to provide less biased evidence of the effect of Erasmus mobility on university wages and employment. To the best of our knowledge, there are no studies that analyze the Spanish case from this perspective. The objective of this paper is to contribute to cover this gap by analyzing two graduate surveys. The main result of the study is that the Erasmus program has a positive impact on the productivity of recent graduates in the medium term, which translates into an increase in wages of 10 to 12 percentage points.

Keywords: Mobility, Erasmus, Graduates, Wages, Employment, Propensity Score Matching.

Resumén:

Existe una escasa literatura empírica que evalúe el impacto del programa Erasmus en las carreras profesionales de los universitarios. En ocasiones la evidencia empírica que se aporta sobre la materia es parcial e indirecta. Además, habitualmente no se tiene en cuenta que los estudiantes que participan en los programas de movilidad son distintos del resto de sus compañeros en cuanto a su capacidad, entorno socioeconómico o campo de estudios, de forma que no podemos afirmar que las correlaciones observadas sean realmente causales.

En este trabajo se utiliza *propensity score matching* al objeto de proporcionar una evidencia menos sesgada sobre el efecto de la movilidad Erasmus en los salarios y empleo de los universitarios. Hasta donde llega nuestro conocimiento, no existen trabajos que analicen el caso español desde esta perspectiva. El objetivo de este trabajo es contribuir a cubrir ese hueco mediante el análisis de dos encuestas de inserción laboral de graduados. El principal resultado del estudio es que el programa Erasmus tiene a medio plazo un impacto positivo en la productividad de los recién titulados, que se traduce en un incremento de los salarios de entre 10 y 12 puntos porcentuales, independientemente de la fase del ciclo económico en que nos encontremos

Palabras claves: Movilidad, Erasmus, Graduados, Salarios, Empleo.

Materia: Economía de la educación

Iñaki Iriondo Múgica

Departamento de Economía Aplicada II

Facultad de Ciencias Económicas y Empresariales

Campus de Somosaguas, Universidad Complutense de Madrid

Pozuelo de Alarcón, 28223, Madrid, Spain

iriondo@ccee.ucm.es

Teléfono: +34 913 942 642

Noviembre 2017 (fecha de recepción)

Este trabajo ha sido editado por la Biblioteca de la Facultad de CC Económicas y Empresariales de la UCM, de acuerdo con los requisitos de edición que figuran en la [Web institucional](#). Las opiniones expresadas en este documento son de exclusiva responsabilidad de los autores.

Introduction

Since its implementation in 1987, over 3 million European students have participated in the Erasmus study mobility program. Over time, Spain has established itself, in terms of number of participants, as the program's main country of origin and destination. The growth of international study mobility in Spain was especially evident between 2001 and 2011, a period in which the number of incoming and outgoing Erasmus students more than doubled, reaching a total of 36,842 outgoing students and 42,537 incoming students in 2014-2015 (see Figure 1). At the same time, the Complutense University of Madrid has held the top position both in terms of sending and receiving Erasmus students, reaching maximum levels in the 2011-2012 academic year with 1,984 outgoing students and 1,938 incoming students (see Figure 2).

[Figures 1 and 2, around here]

In financial terms, during the academic year of 2013-2014, the Erasmus program invested over 580 million euros to cover the study mobility of around 272,000 students, and 57,000 teachers and administrative staff. For the 2014-2020 period, the European Commission increased the "Erasmus +" budget allocation by 40%, reaching a total of 14,700 million euros (European Commission, 2015). Given the figures involved, ascertaining the real impact of the program on student career prospects has become a matter of growing interest (Di Pietro, 2015). Universities, governments, employers and students themselves tend to assume automatically that international study mobility programs have a positive impact on employment prospects (Waibel et al, 2017). However, the actual effects of study mobility on the human capital has yet to be determined (Oosterbeek and Webbink, 2011).

The main objective of this article is to assess the impact of the Erasmus program on graduate salary and employment prospects in Spain. Despite the scale of the Erasmus program, the availability of empirical studies evaluating its impact on the Spanish labour market are scarce. Moreover, given that participants in mobility programs present different characteristics from their peers in terms of ability, field of study or socioeconomic background, it cannot be stated with any certainty that the correlations observed to date are in fact causal.

In this study, we used propensity score matching (PSM) as a means to reaching a less biased assessment of the effect of Erasmus study mobility has on graduate career prospects. The PSM technique involves the selection of a control group –non-Erasmus students– in which the distribution of the observable variables is similar to the distribution of the group under study –Erasmus students– (Rosenbaum and Rubin, 1983). For this purpose, we analysed the information obtained from two graduate surveys: 1) the Labour Insertion Survey of University Graduates (*Encuesta de Inserción Laboral de Titulados Universitarios*, EILU), carried out in 2014 by the Spanish National Statistical Institute (INE), representative of the Spanish university system as a whole; and 2) the Labour Insertion Survey (*Encuesta de Inserción Laboral*, EIL) carried out in 2008, representative of undergraduates at the Complutense University of Madrid. The main conclusion reached, as far as Spain is concerned, is that over the medium term, rather than the short term, Erasmus study mobility had a positive impact on graduate prospects, leading to salaries that were 10 % to 12% higher in comparison with non-participants.

The following sections of this study cover: a review of the literature, a description of data obtained, a brief methodology description, a presentation of the empirical results, and finally, the presentation of main conclusions.

Literature review

A wide range of literature focused on student international mobility, and in particular, the Erasmus program, has been published, but few studies assess the impact it has on human capital or graduate career prospects. Moreover, the empirical evidence provided is often qualitative, indirect or based on small sample sizes (Di Pietro, 2015). Nevertheless, over the last decade, a number of articles seeking to provide causal evidence of the impact of study mobility on employment and wages, have been published (Waibel et al, 2017).

An important premise to consider in its assessment is that in comparison with non-mobile students, internationally mobile students present different characteristics in terms of ability, field of study, family

background and other personal attributes. Failure to consider this, could lead to the erroneous conclusion that the better outcomes observed are solely attributable to the impact of the Erasmus program rather than other unobservable factors, which may also contribute positively. It is therefore necessary to separate the effects of study mobility from the influence of other characteristics that may be correlated with Erasmus mobility (Di Pietro, 2015).

Existing empirical evidence on academic performance indicate that Erasmus participants tended to perform better during secondary education (Kratz and Netz, 2016, Wiers-Jenssen, 2011) or tertiary education (Di Pietro, 2015, Teichler, 2011). In addition, they tended to come from wealthier economic backgrounds (Souto, 2008) or had parents with a university education (Kratz and Netz, 2016; Di Pietro, 2015). Failure to take into account that these variables are also correlated with income would lead to an upward bias in ordinary least squares estimates on the effect of study mobility on wages. Equally, downward biases may occur if certain attributes that relate negatively to income prospects are positively associated with the probability of studying abroad. In this sense, empirical evidence indicates that women, younger students and those in the fields of Arts and Humanities show a greater propensity to participate in international study mobility (Kratz and Netz, 2016).

In the literature, three quasi-experimental methods are used to provide causal evidence on the effects of students' international mobility in their later professional career: estimation by instrumental variables (Oosterbeek and Webbink, 2006, Messer and Wolter, 2007; Di Pietro, 2015), *regression discontinuity design* (Oosterbeek and Webbink, 2011) and *propensity score matching* (Rodrigues, 2013).

Some authors suggest that international study mobility may even delay access to first employment (Wiers-Jenssen and Try, 2005, Oosterbeek and Webbink, 2011, Rodriguez, 2013). They argue that those who study abroad develop to a lesser extent, the social and institutional relationships that facilitate the search for employment in the home country (Wiers-Jenssen and Try, 2005). Di Pietro's conclusion (2015) provides an exception to this general pattern by finding that Italian graduates who studied abroad have a 22.9 percent higher probability of gaining employment three years after completing their studies.

Oosterbeek and Webbink (2006) find that studying a year abroad is associated with an increase of 3 to 10 per cent on salary prospects in Dutch university students, although the effect is not significant when estimated using instrumental variables. Similarly, Messer and Wolter (2007), who studied the impact of exchange programs on first job salaries of Swiss university students, found that when the selection bias is not corrected, mobility had a positive effect on starting salary, but when the model is estimated by instrumental variables, the effect disappears. This led them to the conclusion that international study mobility had no significant effect on salary prospects. Finally, Rodrigues (2013) found that 5 years after graduation, mobile students earned 3% more than non-mobile students. However, notable differences existed by country and field of study.

By field of study, Rodrigues (2013) finds study mobility had a positive influence on graduate salaries in the fields of Social Sciences and Engineering. However, she did not observe a significant influence in Education, Health Sciences, Arts and Humanities, Mathematics, Agriculture and Services. Similarly, Kratz and Netz (2016) found that international mobility did not increase salary prospects in highly regulated professions, such as Medicine and Education. By country, Teichler and Janson (2007) found that the impact of the Erasmus program was greater in Central, Eastern and Southern Europe than in Northern and Western Europe, while Rodrigues (2013) found that international study mobility only had a significant impact on hourly earnings in Poland, the Czech Republic, Italy, Spain and France.

Internationally mobile graduates compete more effectively in the labour market by becoming more proficient in certain skills, such as second language speaking and writing fluency (Wiers-Jenssen and Try, 2005; Teichler, 2011; Wiers-Jenssen, 2011). Kratz and Netz (2016) find that 68% of German mobile students attained a high level in a foreign language, while the proportion in non-mobile students stood at only 22%. Rodrigues (2013) found international mobility to be closely associated with a significant increase in the ability to speak and write in a foreign language, but recognize that some of these skills may have been acquired before mobility.

The data

The statistical sources used in this paper consisted of: a) the Labour Insertion Survey of University Graduates¹ (EILU); and b) the Labour Insertion Survey (EIL). The EILU, a nationwide survey conducted by the Spanish National Institute of Statistics (INE), concerned the transition of 30,379 diploma holders (3-year course) and bachelor degree graduates (5-year course) from university into employment, while the EIL survey examined the same transition from a sample of 919 degree holders from the Universidad Complutense de Madrid (UCM), the largest university campus in Spain. In order to facilitate the comparison between the two samples and taking into account that 78.1% of Erasmus students in the EILU survey were bachelor degree graduates, we decided to exclude 3-year diploma graduates, therefore leaving a final sample size of 16,405 observations in the EILU survey.

Both surveys provide information on the personal characteristics of the graduates, their training and transition into employment. The EILU involved a cohort of graduates from the academic year 2009/10, with the research data gathered in 2014/15, while data from the EIL, involving graduates from 2001/02, was gathered in 2007/08. Clearly, the different time periods concerned must be taken into account when interpreting the results, given that the data obtained from the EILU survey was gathered during a period of crisis, when in Spain, unemployment among university graduates between the ages of 25-29 years rose to 22.6% (fourth quarter of 2014). In contrast, analysis of the EIL cohort took place during a period of economic expansion, when unemployment among university graduates of the same age group fell to 7.5% (fourth quarter of 2007). Interestingly, the range and differences in the variables obtained from each survey, including factors such as periods of expansion vs crisis, territorial coverage (local vs national) and the type of information obtained (the EIL provided information on student socioeconomic backgrounds and academic records, but the EILU did not), serve to highlight the complementary nature of the two surveys.

¹ Detailed information on the EILU methodology can be found in INE (2016).

The variables of interest in our empirical analysis were salaries and employment. The information obtained from EIL survey focussed on the first significant job after graduation and that they held six years later. The salary indicator was determined by the logarithm of the midpoint within the range of monthly after tax income. Information on employment and income from the EILU survey came from administrative sources (General Treasury of Social Security). The employment indicator showed whether the graduate was affiliated to the Social Security on at least one day in March each year, between 2011 and 2014. The income variable represents the logarithm of the median of the quintiles of Social Security contribution payments in March each year.

Table 1 presents a summary of the descriptive statistics of the main variables. Both surveys present a similar proportion of Erasmus graduates (10-11%), with women representing the majority in both cases: EIL (67%) and EILU (58%). The higher occurrence of women in EIL is attributable to the higher number of graduates from the Humanities and Social Sciences fields. EIL graduate nominal salary was observed to increase by 64% from the first significant job to that held 6 years later, consistent with the period of economic expansion occurring in Spain from 2002 to 2008. Employment rates at 74% (first job) and 85% (6 years later) confirm the strength of demand for skilled labour throughout this period. However, a dramatically different picture emerges when EILU data is examined. Increases in nominal salaries hardly reach 16% from first employment until 5 years after finishing higher education. Although employment did increase by 25 percent over the same period, it stood at 66% in 2014, almost 20 per cent below that registered in the EIL.

[TABLE 1, around here]

Methodology: *propensity score matching* (PSM)

Propensity score matching is a widely used technique in impact assessment of public policies (Rosenbaum and Rubin, 1983; Dehejia and Wahba, 1999; Caliendo and Kopeinig 2008). This article sought to measure the effect of international student mobility on employment and salaries. Since we cannot design an experiment comparing the labour status of the same individual with and without Erasmus mobility, we have attempted to approach this theoretical concept using PSM. When working with observational data, it is very difficult to determine the

counterfactual, because the same person cannot be situated in two different states. Our aim was to select a group for comparison made up of individuals who did not participate in study mobility programs, but presented similar characteristics to Erasmus students in terms of gender, academic records, parental education, fields of study and other proxies of individual ability and socioeconomic status. As a means to achieving this purpose, we estimated a propensity score, representing "the conditional probability of assignment to a particular treatment given a vector of observed covariates" (Rosenbaum and Rubin, 1983).

We used the following method in an attempt to answer the following question: What would the employment situation of an Erasmus graduate be in the event of not having participated in the program –the counterfactual? The comparison of differences in employment and salary of mobility graduates and those of the control group provide a less biased assessment of the effect of the Erasmus program at the early stages of graduate careers.

$$ATET = E[Y_{1i} - Y_{0i}|T_i = 1] = E[Y_{1i} | T_i = 1] - E[Y_{0i} | T_i = 1] \quad (1)$$

ATET represents the average treatment effect in the treated, i.e., not among all the graduates, but only among those who had participated in the mobility program ($T_i=1$). Y_{1i} represents result under treatment, in our case the level of employment or wages of graduates with mobility, while Y_{0i} represents the result if there is no treatment, i.e., the level of employment or wages of an Erasmus student to be expected in the hypothetical case of not having had the international experience.

The problem is that we usually observe employment status and wages of graduates with international mobility (under treatment) and the employment status and wages of graduates without mobility (without treatment), and the difference between the two expresses as follows:

$$\begin{aligned} E[Y_{1i}|T_i = 1] - E[Y_{0i}|T_i = 0] &= E[Y_{1i} - Y_{0i}|T_i = 1] + \\ &+ \{E[Y_{0i} | T_i = 1] - E[Y_{0i} | T_i = 0]\} = ATET + bias \end{aligned} \quad (2)$$

The bias represents the difference between the treated ($T_i=1$) and control group ($T_i=0$) in the results they would observe in the absence of treatment (Y_{0i}).

A probit model was used in the estimation of the propensity score. The similarity between individuals is based on the estimated probabilities of being treated, in our case, the probability of participating in the Erasmus program. In order to ensure PSM technique functions properly, the overlap between treated and controls should be broad. In this work, the method of pairing used was the nearest neighbour, without setting a maximum distance for the matching (caliper). In the implementation of PSM we followed the `psmatch2` module by Leuven and Sianesi (2003) for STATA.

To study the effect of Erasmus mobility on employment and salaries, the following linear regression models were estimated:

$$employment = \beta_1 + \beta_2 Erasmus_i + \beta_3 X + \beta_4 fieldsFE + \beta_5 regionFE + \varepsilon \quad (1)$$

$$Ln(salary) = \gamma_1 + \gamma_2 Erasmus_i + \gamma_3 X + \gamma_4 fieldsFE + \gamma_5 regionFE + u \quad (2)$$

In which employment is a dichotomous variable that takes value 1 when the graduate was in employment and 0 otherwise. $Ln(salary)$ represents the logarithm of the graduate income. Erasmus is a dichotomous variable that takes value 1 if the graduate participated in the mobility program and 0 otherwise. X is a vector of graduate training and personal attributes that bear an influence on the probability of obtaining employment, such as gender, age, disability over 33%, nationality, general grants, excellence scholarships, masters degrees and type of university. Finally, $fieldsFE$ represent a set of dummy variables related to the field of study and $regionFE$, a set of dummy variables related to the region where study took place.

Results

Table 2 shows the marginal effects of a probit model that estimates the conditional probability of participating in the Erasmus mobility program, using the information obtained from the two surveys. The results from the EIL (UCM) survey appear in the left panel, while those from the EILU (INE) in the right panel. The independent variables of the model in the left panel are sex, field of study, socioeconomic background – approximated by father's education– and academic records. The right panel includes variables concerning field of study and personal attributes, such as sex, disability, age and nationality, along with two controls on grants that reflect the influence of family circumstances (general grant, which concession indicates that the family income is lower than certain threshold) and student ability attributes (excellence scholarships, awarded exclusively to students with extraordinary academic records). Finally, a variable informing whether the individual studied at a private university is also included.

[TABLE 2, around here]

According to the EIL survey, at the Complutense University of Madrid, the representation of women in Erasmus programs is slightly higher, though the coefficient is not statistically significant in the participation equation. Academic records show a positive and significant association with the probability of Erasmus participation, an expected result, given that student academic records form part of Erasmus eligibility criteria. With respect to family attributes, students whose father had a higher education show a 10 per cent higher probability of participating in Erasmus programs than those whose father achieved secondary education only. Finally, significant differences were also found across fields of study. Taking Political Science as reference, in which 21% of graduates participated in Erasmus programs, we found graduates of Biology, History of Art, Pedagogy, Pharmacy, Medicine, Communication, Law, Business, Economics and Psychology show a probability between 7 and 11 points lower of participating in Erasmus programs.

In contrast to the EIL, the EILU survey showed that Erasmus participation among women was 1 percentage point lower than among men, but coefficient was statistically significant. Graduates over 34 showed an 11

percentage points lower probability of participation than those under 30, as was the case with foreign and private university students who also showed lower participation rates. However, students awarded excellence scholarships showed a 9 points higher probability of being mobile. Finally, taking the field of Law students as reference, higher probabilities were found among Language students (12 percentage points more) and Architecture students (7 percentage points more), while in Education (6 points less) or in Mathematics, Veterinary sciences and Medicine (4 points less in all three cases) showed less propensity.

These results confirm the existence of significant differences among Erasmus student profiles that can eventually be associated with unequal prospects in the labour market. Failure to account for these differences would create bias in ordinary least squares estimations of the effect of study mobility on employment and salaries, even though, *a priori*, it does not seem easy to determine the direction of the bias. The use of the *propensity score matching* technique is therefore justified as a means to obtaining less biased evidence of the Erasmus impact during early stages of graduate careers.

The objective of the participation equation is to estimate propensity scores used in the matching between "treated" (Erasmus) and "controls" (not Erasmus). We matched each Erasmus graduate with a control with a similar probability of Erasmus participation and used the propensity score as a measure of similarity. To ensure correct matching, a balance table was used to show the means of the explanatory variables included in the participation equation, before and after the matching (see Tables 3 and 5).

[TABLES 3 and 5, around here]

In the UCM sample, prior to matching, significant differences were observed between Erasmus and non-Erasmus graduates in student academic records (calculated as the difference between the individual's grade and average grade achieved by all students in the same field), in father's level of education, and distribution of graduates by field of study (see Table 3). For example, while 34% of non-Erasmus graduates had a father with higher education, the percentage was 60% among Erasmus students. In parallel, 12% of Erasmus students had fathers with primary education, compared to 26% among non-Erasmus students. EILU data showed similar

differences, as for example, in age, with the over 34 category representing 15% of non-Erasmus graduates compared to 3% of Erasmus graduates (see Table 5). In the opposite direction, students with excellence scholarships represent 6% of Erasmus graduates and only 3% of non-Erasmus graduates. By field of study the most marked difference was observed in the area of languages, a field that represents 14% of the treated group (Erasmus) and only 5% of the comparison group (not Erasmus).

Matching allows balancing characteristics of Erasmus and non-Erasmus graduates, so that test of differences in means after matching are no longer statistically significant. Similarly, the balance indicators of covariates show a marked reduction in bias after matching (see Tables 4 and 6). In addition, likelihood ratio test results indicate that, after matching, the hypothesis that regressor variables as a whole are not significant to explain the participation in the Erasmus program cannot be rejected.

[TABLES 4 and 6, around here]

A necessary pre-condition in the use of PSM method is to ensure the existence of a sufficiently broad common support region, i.e., "treated" and "untreated" individuals must be found for each range of values in the propensity score. Graphs 3 and 4 show the density function of propensity scores before and after matching, using the estimation of the salary equation 5-6 years after graduation. In the first place, it is observed that the degree of overlap of the distributions before matching is high, even though density functions of Erasmus and non-Erasmus are unequal. The second finding indicates that control sample selection by propensity scores tends to cause distributions of the treated and controls to equalize after the matching.

[FIGURES 3 and 4, around here]

After matching, models (1) and (2) were used to study employment and salary determinants, respectively, both immediately after, and 5-6 years after graduation. Table 7 shows the results obtained from the UCM graduate sample. The final sample reduced from an initial sample of 919 observations to 192, consisted of 96 Erasmus graduates and a control comparison group of equal size. The results indicate that Erasmus mobility had no

significant short-term effect on either employment or salaries; a result consistent with that obtained by Messer & Wolter (2007). In contrast, Erasmus graduates were observed to have a 10.6 per cent higher probability of having a job; a similar finding, but to a lesser magnitude than that estimated by Di Pietro (2015). Salaries were 11.8 logarithmic points higher, equivalent to a 12.5 per cent higher monthly net income².

[TABLE 7, around here]

Similarly, Table 8 presents the results of the impact of Erasmus mobility in the EILU survey. In contrast to the UCM sample, employment and salary information originates from the four consecutive year period of 2011 to 2014. On employment, international mobility had a negative impact during the first year after graduation. In 2011, Erasmus graduates show 4.7 per cent lower probability of gaining employment than the rest of graduates, a result consistent with Wiers-Jenssen and Try (2005) and Rodriguez (2013). However, this negative effect disappears after the second year, in which between 2012 and 2014 the coefficient tends to zero and becomes statistically non-significant. With regard to salaries, no significant differences between Erasmus graduates and the comparison group existed during the first two-year period, but became apparent from the third year, when the coefficient becomes positive and significant, reaching increases in salary of 10.4 percentage points in 2014 and consistent with estimates by Rodrigues (2013).

[TABLE 8, around here]

We also tested the sensitivity of the obtained results to changes in PSM technique. Tables 9 (EIL survey) and 10 (EILU survey) show what effect the use of different matching algorithms has on Erasmus mobility impact assessments, using one-to-one matching, k-Nearest neighbors matching ($k = 1$, $k = 5$ and $k = 10$), Radius, Kernel, Local linear regression and Mahalanobis. The general pattern of the results obtained remains very stable, despite some small variations in coefficient values.

² In the case of dichotomous variables, the interpretation of the coefficient is as follows: $\exp(\beta) = W_{\text{Erasmus}} / W_{\text{noErasmus}}$.

[TABLES 9 and 10, around here]

We were also interested in estimates in accordance with countries of destination and duration of stay, for which we analyzed the impact of study mobility on 2014 salaries, substituting the Erasmus variable for 8 country dummy variables and 5 duration categories, obtained from the EILU survey. Table 11 shows the estimation of the income equation by OLS and PSM. The results obtained were quite similar and indicated mobility was positive and significant in Germany (15.6%), France (12.9%), Nordic Countries (10.6%), United Kingdom (9.4%) and in “other countries of the European Union” (9.1%). However, in other destinations such as Italy, Portugal and the “Rest of Europe” no significant effect on salaries was observed. These results are consistent with the hypothesis proposed by Rodrigues (2013), who maintained that mobility only had a positive impact on human capital when students benefit from learning at higher standing universities. Duration of stay showed no significant impact within two extreme categories (1 to 3 months and over 12 months), which together represent less than 3% of total observations. Mobility tends to lead to a higher impact when duration covers two semesters (from 7 to 9 months) rather than one semester only (from 4 to 6 months). In contrast, the magnitude of impact for longer stays (from 10 to 12 months) tends to reduce.

[TABLES 11 and 12, around here]

One mechanism through which international mobility contributes positively to graduate careers is language learning, above all in a country like Spain, where there has been a traditional scarcity of this skill. Table 13 shows the estimation results of a linear regression model used to study the relationship between Erasmus mobility and language skills. Once the usual controls were introduced, we observe that Erasmus graduates had a 25 percent higher probability of gaining a high level of language proficiency. Furthermore, when the Erasmus variable in the second column of Table 13 is replaced by duration, the probability of achieving a high level of mastery increases with length of stay.

[TABLE 13, around here]

Lastly, the information from the EIL survey allows us to analyse the type of skills required in the job position the graduate holds 6 years after completing his studies. Of the 11 competences researched, Erasmus graduates consider that "knowledge of foreign languages" is very necessary in their jobs, 16.5 percentage points higher than non-mobile graduates. This result is consistent with the fact that students that participate in the Erasmus mobility program are more likely to work in multinational companies, or perform tasks with an international component (Teichler and Jahr, 2001). In addition, there is a positive and significant association between Erasmus mobility and those jobs in which the "analytical capacity" and the "acquisition of new knowledge" are necessary skills for their performance.

[TABLE 14, around here]

Conclusions

This article studies the impact of the Erasmus study mobility programs on employment and salaries of recent graduates. Data for empirical analysis was obtained from two graduate surveys; one representative of the Spanish university system (EILU-2014) as a whole, and the other concerning the Complutense University of Madrid (EIL-2008), the largest on-campus university in Spain.

We used the *propensity score matching* technique in an attempt to obtain a less biased estimation of the impact of mobility on graduate career prospects. We observed conflicting results for employment. Erasmus study mobility impacted positively in the period of economic expansion in the medium term, but negatively on employment prospects in the period of crisis one year after graduation. However, this effect disappears from the second year on. The results for salaries revealed that 5-6 years after graduation, Erasmus mobility had a positive effect, with salaries at between 10 and 12 percent higher, confirming the hypothesis that in the case of Spain, the Erasmus program may be considered as an investment rather than consumption.

A Cost/benefit analysis for Erasmus program in Spain was carried out to estimate profitability from both a public sector and private individual point of view. The analysis of costs includes the public resources allocated

to the Erasmus program: made up of scholarship grants (up to 2,100 euros per student) and the material and human resources necessary for its operation in universities, national education departments and the European Commission (up to 4,200 euros per student). The calculation of Public benefits includes higher tax revenues, resulting from higher salaries, which based on an average tax rate of 20% and the age-salary profiles outlined in the Spanish Quadrennial Survey of Salary Structure (INE, 2014), provide a rate of return of 6.7%. From the private individual perspective, costs include the resources that families allocate to cover participation, including travel, accommodation and, among others, installation costs in another country, amounting to an estimated 11,800 euros per student. When this expenditure is set against average net earnings over the graduates working life, we obtain a private rate of return of 11.5%. As long as the market interest rates are below these internal rates of return, the investment in the Erasmus program may be considered profitable.

Finally, it is interesting to highlight that the impact of study mobility on income prospects varies depending on country of destination. The results indicate that the effect is positive in Germany, France, the United Kingdom, Scandinavian countries and “other EU countries”, but not statistically significant for the destinations of Italy, Portugal and “rest of Europe”. Erasmus study mobility had a positive effect on salaries for stays of both one and two semesters.

With regard to the educational policy recommendations, we feel it is necessary to promote further research on the impact of study mobility programs on the human capital of university graduates. We believe an effort should be made to increase awareness of its benefits throughout society in general. Our findings with regard to study destinations also suggest that increasing the number of places at destinations where the foreign study experience has a greater impact on students’ productivity would be appropriate. On a final note, we believe public authorities should take action to encourage greater Erasmus participation by students from disadvantaged socio-economic backgrounds, who tend to be under-represented in international mobility.

Bibliography

Caliendo, M. and S. Kopeinig (2008), Some Practical Guidance for The Implementation of Propensity Score Matching. *Journal of Economic Surveys*, 22: 31–72. doi:10.1111/j.1467-6419.2007.00527.x

Dehejiaa, R.H. and S. Wahbabj (1999) Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs, *Journal of the American Statistical Association*, Vol. 94 (448). DOI: 10.1080/01621459.1999.10473858.

Di Pietro, G. (2015) “Do study abroad programs enhance the employability of graduates?” *Education Finance and Policy*, 10(2), 223-243.

European Commission (2015) *Erasmus. Facts, Figures & Trends. The European Union support for student and staff exchanges and university cooperation in 2013-2014*, Directorate-General for Education and Culture, European Commission, Brussels.

INE (2016) *Encuesta de Inserción Laboral de Titulados Universitarios 2014. Metodología*. Instituto Nacional de Estadística. Madrid. http://www.ine.es/daco/daco42/eilu/metodologia_2014.pdf

Kratz F. and N. Netz (2016): Which mechanisms explain monetary returns to international student mobility? *Studies in Higher Education*, DOI: 10.1080/03075079.2016.1172307

Leuven, E. and B. Sianesi (2003) PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. Software, <http://ideas.repec.org/c/boc/bocode/s432001.html>.

Messer, D. and S. C. Wolter (2007) “Are student exchange programs worth it?”, *High Educ*, 54:647–663. DOI 10.1007/s10734-006-9016-6

Oosterbeek, H. and D. Webbink (2006) “Assessing the returns to studying abroad” *CPB Discussion Paper N. 64*, CPB Netherlands Bureau for Economic Policy Analysis.

Oosterbeek, H. and D. Webbink (2011) “Does Studying Abroad Induce a Brain Drain?”, *Economica*, 78: 347–366. Doi:10.1111/j.1468-0335.2009.00818.x

Rodrigues, M. (2013) Does Student Mobility during Higher Education Pay? Evidence from 16 European Countries, Report EUR 26089 EN, Ispra, Italy: Joint Research CENTRE, European Commission.

Rosenbaum, P.R. and D. B. Rubin (1983) “The central role of the propensity score in observational studies for causal effects”, *Biometrika* Vol. 70 (1), pp: 41-55. Doi: 10.1093/biomet/70.1.41.

Souto Otero, M. (2008) "The socio-economic background of Erasmus students: A trend towards wider inclusion?" *International Review of Education* 54:2, pp: 135–154. Online at: DOI: 10.1007/s11159-007-9081-9

Teichler, U. (2011) “International Dimensions of Higher Education and Graduate Employment.” In *The Flexible Professional in the Knowledge Society*, edited by Jim Allen and Rolf van der Velden, 177–98. Dordrecht: Springer. doi:10.1007/978-94-007-1353-6_7.

Teichler, U., and K. Janson (2007) "The professional value of temporary study in another European country: Employment and work of former Erasmus students" *Journal of Studies in International Education* 11:3–4, pp: 486–495. Online at: DOI: 10.1177/1028315307303230

Waibel, S., H. Rüger, A. Ette, L. Sauer (2017) "Career consequences of transnational educational mobility: A systematic literature review", *Educational Research Review*, Volume 20, February 2017, Pages 81-98. <https://doi.org/10.1016/j.edurev.2016.12.001>.

Wiers-Jenssen, J. 2011. "Background and Employability of Mobile vs. Non-mobile Students." *Tertiary Education and Management* 17 (2): 79–100. DOI:10.1080/13583883.2011.562524.

Wiers-Jenssen, J., and S. Try (2005) "Labour Market Outcomes of Higher Education Undertaken Abroad." *Studies in Higher Education* 30 (6): 681–705. Doi:10.1080/03075070500340028.

Table 1.- Descriptive statistics

Mean (standard deviation)	EIL (UCM)	EILU (INE)
% Erasmus	10,4 (30,6)	11.4 (31.8)
% Women	67.0 (47.0)	58.1 (49.3)
% father with Higher Education	36.5 (48.2)	n.d.
% with general grant	n.d.	32.0 (46.6)
% with excellence scholarship	n.d.	3.2 (17.6)
Average Mark record [scale: 1 to 4]	1.7 (0.4)	n.d.
% postgraduate education: master	20.9 (40.7)	42.2 (49.4)
% Arts and Humanities	25.5 (43.6)	19.3 (39.5)
% Science	4.6 (20.9)	15.6 (36.3)
% Social Sciences and Law	60.3 (49.0)	41.3 (49.2)
% Engineering and Architecture	0.0 (0.0)	14.9 (35.6)
% Health Sciences	9.7 (29.6)	8.8 (28.4)
Monthly salary in euros (1st job)	947.0 (430.4)	1,457.7 (824.1)
Monthly salary in euros (5-6 years later)	1,556.2 (637.9)	1,686.2 (838.4)
% with employment after graduation	74.1 (43.9)	41.3 (49.2)
% with employment 5-6 years later	84.7 (36.1)	66.5 (47.2)
Number of observations	919	16.405

Source: EIL 2008 - UCM. Own calculations.

Table 2.- Erasmus participation equation: marginal effects after probit

EIL (UCM)			EILU (INE)		
VARIABLES	coef ⁽⁺⁾	se	VARIABLES	coef ⁽⁺⁾	se
female	0.030	(0.023)	disability	-0.030	(0.026)
academic records	0.064**	(0.026)	female	-0.011**	(0.005)
father higher edu.	0.104***	(0.031)	age 30 to 34	-0.020***	(0.005)
father primary edu	-0.024	(0.025)	age over 34	-0.106***	(0.003)
biology	-0.090***	(0.018)	foreign	-0.074***	(0.018)
fine arts	-0.010	(0.046)	general grant	-0.005	(0.005)
Spanish philology	-0.048	(0.036)	excellence scholarship	0.095***	(0.017)
English philology	-0.039	(0.037)	private uni.	-0.041***	(0.007)
history	-0.054*	(0.029)	education	-0.058***	(0.013)
art history	-0.113***	(0.010)	arts	0.025	(0.016)
pedagogy	-0.096***	(0.016)	audiovisual / communic.	-0.038***	(0.014)
pharmacy	-0.079***	(0.021)	humanities	-0.023*	(0.013)
medicine	-0.095***	(0.016)	languages	0.122***	(0.019)
communic. & aud.	-0.089***	(0.019)	psychology	-0.039***	(0.013)
law	-0.095***	(0.016)	economics	0.000	(0.015)
business	-0.100***	(0.014)	other social sciences	0.003	(0.016)
economics	-0.070***	(0.023)	journalism	-0.035***	(0.013)
journalism	-0.048*	(0.027)	business	-0.005	(0.012)
psychology	-0.092***	(0.016)	other commercial & busi.	-0.003	(0.016)
advertising	-0.065**	(0.026)	life sciences	-0.020*	(0.012)
sociology	-0.065***	(0.024)	physical. chem. geo.	-0.022*	(0.012)
			mathematics & stat.	-0.037**	(0.014)
			information technology	0.021	(0.018)
			engineering & related	0.032**	(0.015)
			manufacturing industries	-0.024	(0.018)
			architecture and constr.	0.068***	(0.021)
			agric. fishing. livestock	0.050**	(0.025)
			veterinary	-0.038***	(0.014)
			medicine	-0.041***	(0.011)
			other health sciences	-0.025	(0.016)
			sports	-0.048***	(0.012)
			transport. services	-0.002	(0.042)
Observations	919		Observations	16.405	
Pseudo R ²	0.109		Pseudo R ²	0.077	

Notes: (+) Standard errors in brackets [*** p < 0.01, ** p < 0.05, * p < 0.1]

(+ †) The coefficients of 17 additional dummies on the Autonomous Community in which university study took place are not shown in the table.

Source: Own calculations from the EIL-2008 (UCM) and the EILU-2014 (INE)

Table 3.- Tests for differences of means before and after matching -EIL (UCM)

Variable	Erasmus (T)		No Erasmus (C)		t-test before		t-test after	
			before	after	t	p> t	t	p> t
female	0.74	0.66	0.83		1.57	0.12	-1.46	0.15
academic record	0.08	0.00	0.11		2.11	0.04	-0.42	0.68
father higher edu.	0.60	0.34	0.62		4.93	0.00	-0.30	0.76
father primary	0.12	0.26	0.12		-2.90	0.00	0.00	1.00
biology	0.03	0.05	0.04		-0.63	0.53	-0.38	0.70
fine arts	0.09	0.03	0.10		3.16	0.00	-0.25	0.80
Spanish philology	0.03	0.03	0.02		0.02	0.99	0.45	0.65
English philology	0.06	0.03	0.03		1.18	0.24	0.72	0.47
history	0.07	0.05	0.06		0.76	0.45	0.31	0.76
art history	0.01	0.06	0.02		-1.83	0.07	-0.58	0.56
pedagogy	0.01	0.05	0.01		-1.53	0.13	0.00	1.00
pharmacy	0.06	0.05	0.08		0.08	0.94	-0.59	0.55
medicine	0.03	0.05	0.03		-0.73	0.47	0.00	1.00
communic. & aud.	0.02	0.03	0.06		-0.55	0.58	-1.15	0.25
law	0.02	0.04	0.02		-0.72	0.47	0.00	1.00
business	0.03	0.10	0.03		-1.97	0.05	0.00	1.00
economics	0.06	0.06	0.06		-0.18	0.85	0.00	1.00
journalism	0.14	0.11	0.10		1.11	0.27	0.91	0.37
psychology	0.04	0.08	0.06		-1.30	0.19	-0.34	0.73
advertising	0.04	0.05	0.02		-0.15	0.88	0.83	0.41
sociology	0.07	0.08	0.10		-0.30	0.76	-0.81	0.42

Source: Own calculations from the EIL-2008 (UCM)

Table 4.- Balance indicators of covariates before and after matching

EIL (UCM)	absolute standardized mean bias	% reduction mean bias	absolute standardized mean bias	% reduction median bias	Pseudo R ²	LR-test [†] chi ²	p>chi ²
Before	15.10		11.70		0.13	71.59	0.00
After	6.80	55.0%	5.60	52.1%	0.03	7.44	1.00

Note: † Likelihood ratio test. This test studies the joint non-significance of all regressors that explain participation in the Erasmus program.

Source: Own calculations from the EIL-2008 (UCM)

Table 5.- Tests for differences of means before and after matching - EILU (INE)

Variable	Erasmus (T)		No Erasmus (C)		t-test before		t-test after	
	before	after	before	after	t	p> t	t	p> t
disability	0.01	0.01	0.00	0.00	0.20	0.84	2.34	0.02
female	0.57	0.59	0.58	0.58	-0.92	0.36	-0.17	0.86
age 30 to 34	0.28	0.27	0.27	0.27	0.95	0.34	0.39	0.70
age over 34	0.03	0.15	0.02	0.02	-11.09	0.00	0.28	0.78
foreign	0.00	0.00	0.00	0.00
general scholarship	0.34	0.31	0.35	0.35	1.51	0.13	-0.64	0.53
excellence scholarship	0.06	0.03	0.05	0.05	5.41	0.00	1.50	0.13
private uni.	0.09	0.14	0.08	0.08	-4.70	0.00	0.31	0.76
education	0.01	0.03	0.01	0.01	-3.27	0.00	0.00	1.00
arts	0.03	0.03	0.04	0.04	0.74	0.46	-0.12	0.91
audiovisual / communic.	0.01	0.03	0.01	0.01	-2.33	0.02	0.00	1.00
humanities	0.03	0.04	0.03	0.03	-1.95	0.05	0.27	0.79
languages	0.14	0.05	0.15	0.15	11.99	0.00	-0.73	0.47
psychology	0.02	0.05	0.02	0.02	-3.52	0.00	-0.14	0.89
economics	0.05	0.04	0.05	0.05	1.33	0.18	-0.10	0.92
other social sciences	0.03	0.05	0.03	0.03	-1.98	0.05	0.12	0.90
journalism	0.01	0.04	0.02	0.02	-3.54	0.00	-0.18	0.86
business	0.10	0.10	0.10	0.10	-0.03	0.97	-0.43	0.66
other commercial & busi.	0.03	0.03	0.03	0.03	-0.61	0.54	0.26	0.80
life sciences	0.05	0.06	0.05	0.05	-1.26	0.21	0.19	0.85
physical, chem., geo.	0.05	0.05	0.05	0.05	-0.56	0.57	0.00	1.00
mathematics & stat.	0.02	0.03	0.02	0.02	-0.76	0.45	0.29	0.77
information technology	0.04	0.04	0.05	0.05	0.73	0.46	-0.41	0.68
engineering & related	0.12	0.08	0.11	0.11	3.91	0.00	0.20	0.84
manufacturing industries	0.02	0.02	0.02	0.02	-0.66	0.51	0.16	0.87
architecture and constr.	0.03	0.02	0.03	0.03	2.32	0.02	0.27	0.79
agric., fishing, livestock	0.02	0.02	0.01	0.01	0.44	0.66	0.69	0.49
veterinary	0.02	0.02	0.01	0.01	-1.29	0.20	0.35	0.73
medicine	0.05	0.06	0.05	0.05	-1.35	0.18	-0.30	0.76
other health sciences	0.02	0.02	0.01	0.01	-0.74	0.46	0.98	0.33
sports	0.02	0.04	0.02	0.02	-2.62	0.01	0.15	0.88
transport. services	0.00	0.01	0.00	0.00	-0.78	0.44	1.34	0.18

Notes: (†) Standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

(† †) The coefficients of 17 additional dummies on the Autonomous Community in which university study took place are not shown in the table.

Source: Own calculations from the EILU-2014 (INE)

Table 6.- Balance indicators of covariates before and after matching

EILU (INE)	absolute standardized mean bias	% reduction mean bias	absolute standardized mean bias	% reduction median bias	Pseudo R ²	LR-test [†]	
						chi ²	p>chi ²
Before	7.3		4.3		0.07	476.7	0.00
After	1.6	78.1%	1.1	74.4%	0.01	18.1	1.00

Note: † Likelihood ratio test. A test that studies the joint non-significance of all regressors explaining participation in the Erasmus program.

Source: Own calculations from the EILU-2014 (INE)

Table 7.- PSM estimation of the impact on employment and salaries of Erasmus mobility - EIL (UCM)

variables	Impact on employment ⁽¹⁾ (PSM)		Impact on salaries ⁽¹⁾ (PSM)	
	After graduation	Six years later	After graduation	Six years later
Erasmus	0.040 (0.062)	0.106** (0.048)	0.088 (0.055)	0.118** (0.055)
Observations	142	192	188	180
R ²	0.201	0.254	0.386	0.565

Notes: Robust standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

(¹) The following explanatory variables are included in the estimation of the employment equation: female, father's education, academic records, postgraduate education and field of study.

(¹) We include controls on the type of contract, the public sector and the size of the firm in the estimation of the salary equation.

Source: Own calculations from the EIL-2008 (UCM)

Table 8.- PSM estimation of the impact on employment and salaries of Erasmus study mobility - EILU (INE)

variables	Impact on employment (PSM)				Impact on salaries (PSM)			
	e2011	e2012	e2013	e2014	ln(w2011)	ln(w2012)	ln(w2013)	ln(w2014)
Erasmus	-0.047*** (0.015)	-0.023 (0.015)	0.002 (0.015)	-0.001 (0.015)	-0.029 (0.035)	0.017 (0.022)	0.041* (0.021)	0.099*** (0.021)
Observations	3,750	3,750	3,750	3,750	1,242	1,940	2,094	2,146
R ²	0.164	0.143	0.141	0.124	0.380	0.362	0.392	0.390

Notes: Robust standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

The following explanatory variables are included in the estimation of the two models: female, disability, age, nationality, general grants, excellence scholarships, masters, type of university (private / public), field of study and Autonomous Community in which University study took place.

Source: Own calculations from the EILU-2014 (INE)

Table 9.- Impact of Erasmus mobility on graduate employment and salaries with different matching algorithms - EIL (UCM)

Outcome	(1) 1 to 1	(2) K1 NN	(3) K5 NN	(4) K10 NN	(5) radius	(6) kernel	(7) LLR	(8) MAHALAN
Employment 6 years later	0.103** (0.049)	0.103* (0.056)	0.105*** (0.038)	0.080** (0.035)	0.072** (0.032)	0.078** (0.032)	0.103** (0.049)	0.041 (0.041)
Salaries 6 years later	0.110* (0.057)	0.110* (0.061)	0.064 (0.049)	0.087** (0.044)	0.100** (0.040)	0.087** (0.041)	0.110* (0.057)	0.179*** (0.052)

Note: Robust standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

Source: Own calculations from the EIL-2008 (UCM)

Table 10.- Impact of Erasmus mobility on graduate employment and salaries in accordance with different matching algorithms - EILU (INE)

Outcome	(1) 1 to 1	(2) K1 NN	(3) K5 NN	(4) K10 NN	(5) radius	(6) kernel	(7) LLR	(8) MAHALAN
Employment 2014	-0.012 (0.019)	-0.015 (0.019)	-0.017 (0.013)	-0.006 (0.012)	-0.004 (0.012)	-0.007 (0.012)	-0.027 (0.019)	-0.017 (0.019)
Salaries 2014	0.095*** (0.025)	0.096*** (0.025)	0.054*** (0.019)	0.056*** (0.017)	0.047*** (0.016)	0.052*** (0.016)	0.084*** (0.026)	0.033 (0.024)

Note: Robust standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

Source: Own calculations from the EILU-2014 (INE)

Table 11.- Impact of Erasmus mobility on salaries (2014) by country of destination - EILU (INE)

variables	OLS	PSM
Germany	0.109** (0.047)	0.145*** (0.052)
France	0.096* (0.050)	0.121** (0.051)
Italy	0.007 (0.033)	0.051 (0.036)
Portugal	-0.057 (0.062)	-0.014 (0.064)
UK	0.049 (0.044)	0.090* (0.046)
Nordic countries	0.089** (0.038)	0.101** (0.041)
Other EU	0.073** (0.032)	0.087** (0.035)
Rest of Europe	0.037 (0.078)	0.075 (0.082)
Observations	9,356	2,146
R ²	0.313	0.386

Note: Robust standard errors in brackets [*** p < 0.01, ** p < 0.05, * p < 0.1]
 We have included the same explanatory variables as in Table 8.

Source: Own calculations from the EILU-2014 (INE)

Table 12.- Impact of Erasmus mobility on salaries (2014) by length of stay -EILU (INE)

variables	MCO	PSM
1-3 months	-0.109 (0.107)	-0.035 (0.112)
4-6 months	0.063** (0.030)	0.115*** (0.035)
7-9 months	0.080*** (0.025)	0.134*** (0.029)
10-12 months	0.009 (0.029)	0.063* (0.032)
more than 12 months	0.043 (0.073)	0.089 (0.089)
Observations	9,356	2,146
R ²	0.313	0.371

Note: Robust standard errors in brackets [*** p < 0.01, ** p < 0.05, * p < 0.1]
 We have included the same explanatory variables as in Table 8.

Source: Own calculations from the EILU-2014 (INE)

Table 13.- Association between study mobility and high level of language proficiency - EILU (INE)

VARIABLES	(1) language	(2) language
Erasmus	0.249*** (0.011)	
1-3 months		-0.072 (0.074)
4-6 months		0.170*** (0.022)
7-9 months		0.276*** (0.015)
10-12 months		0.283*** (0.019)
more than 12 months		0.308*** (0.072)
disabled	-0.044 (0.037)	-0.046 (0.037)
female	-0.036*** (0.008)	-0.035*** (0.008)
age 30 to 34	-0.083*** (0.009)	-0.083*** (0.009)
age more than 34	-0.129*** (0.012)	-0.129*** (0.012)
foreign	0.259*** (0.044)	0.259*** (0.044)
general grants	-0.055*** (0.008)	-0.055*** (0.008)
excellence scholarships	0.147*** (0.019)	0.148*** (0.019)
masters	0.120*** (0.008)	0.119*** (0.008)
private university	-0.000 (0.013)	0.002 (0.013)
Constant	0.455*** (0.017)	0.453*** (0.017)
Observations	16,405	16,405
R ²	0.166	0.167

Note: Robust standard errors in brackets [*** p < 0.01, ** p < 0.05, * p < 0.1]

The equations also include controls in the fields of study and Autonomous Community in which university study took place.

Source: Own calculations from the EILU-2014 (INE)

Table 14.- Association between Erasmus mobility and the skills needed in the job

Marginal effects after logit	Pr (y = 1)	Erasmus	
		No controls	With controls ¹
1.- Technical knowledge	0.303	0.052	0.034
2.- Team work	0.378	0.052	0.036
3.- Adaptation to change	0.397	0.085	0.088
4.- Leadership	0.201	0.038	0.038
5.- Find new ideas and solutions	0.392	0.090	0.065
6.- Analysis capacity	0.369	0.126**	0.114*
7.- Presentations in public	0.291	0.082	0.036
8.- Prepare reports and studies	0.303	-0.004	-0.009
9.- Knowledge of foreign languages	0.155	0.230***	0.165***
10.- Use of computer applications	0.339	0.057	0.023
11.- Acquisition of new knowledge	0.441	0.151***	0.130**

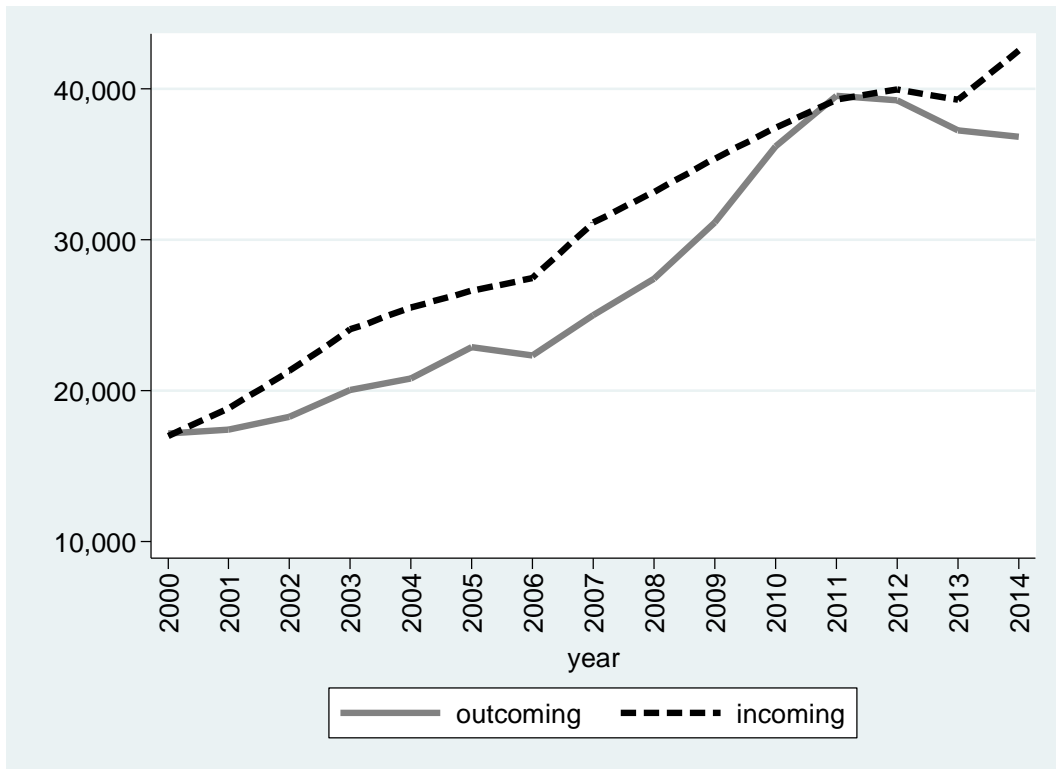
Notes: Robust standard errors in brackets [*** p <0.01, ** p <0.05, * p <0.1]

(¹) We include controls on female, father's education, academic records, postgraduate education, field of study type of contract, public sector and size of the firm.

The number of observations is 778.

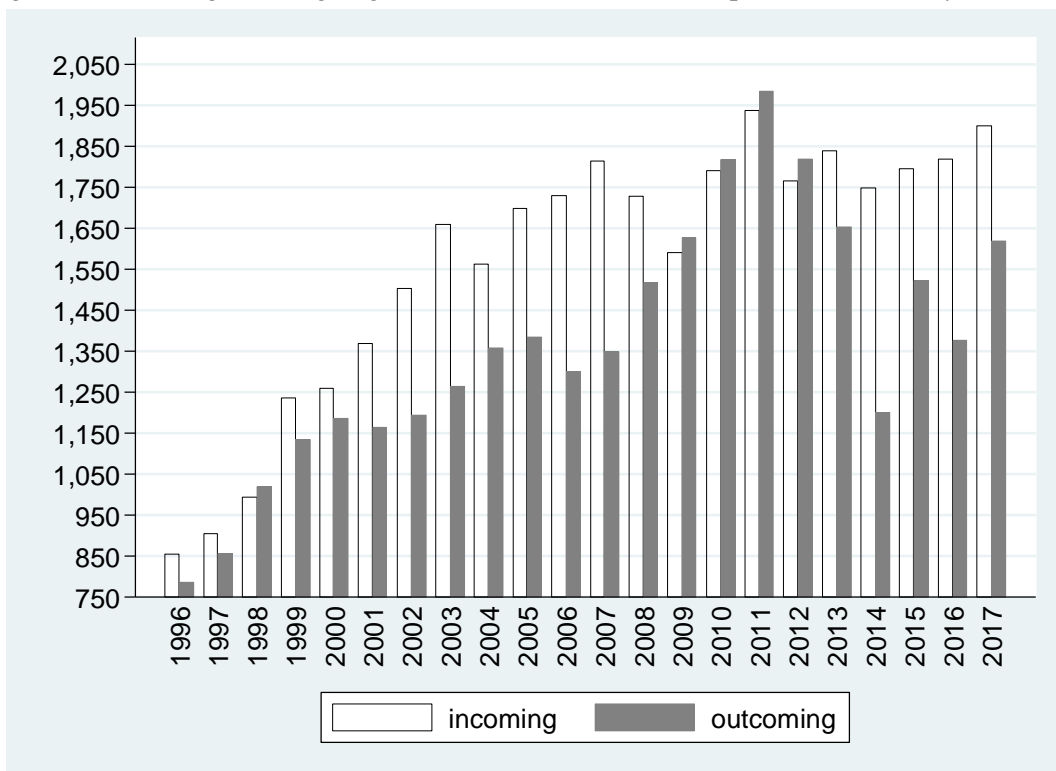
Source: Own calculations from the EIL-2008 (UCM)

Figure 1.- Trends in the number of Erasmus students in Spain



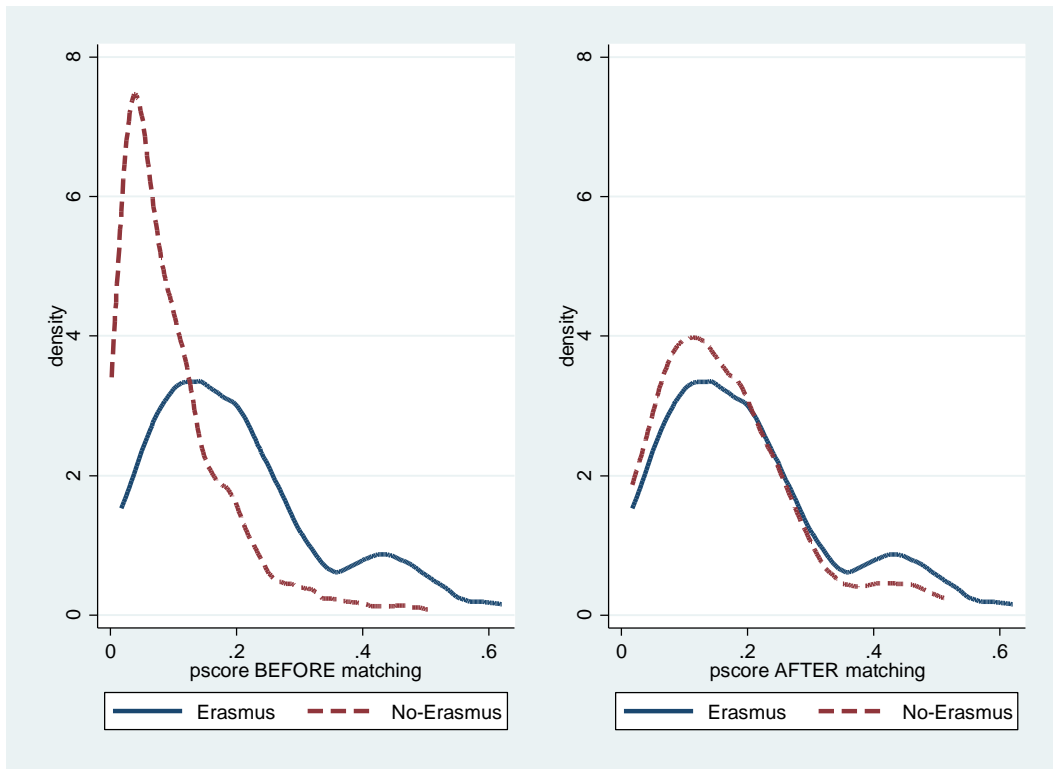
Source: Own elaboration based on data from the EC Erasmus Statistics

Figure 2.- Incoming and outgoing Erasmus students at the Complutense University of Madrid



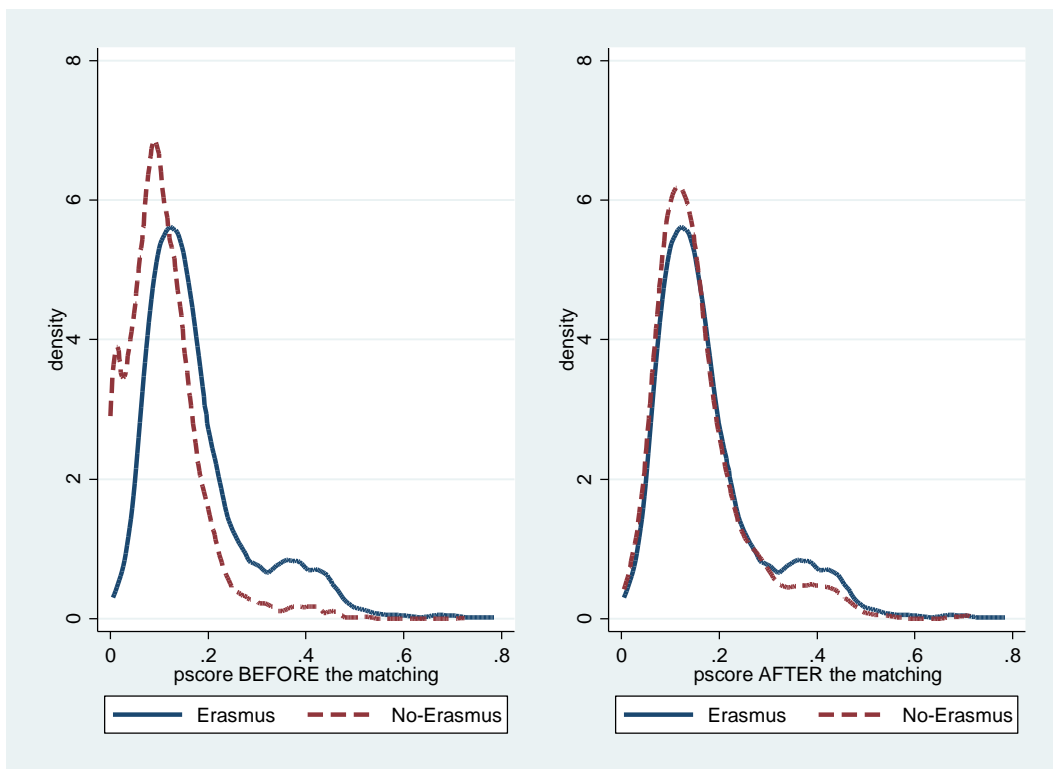
Source: Own elaboration based on data from the UCM International Relations Office

Figure 3.- Propensity scores, before and after matching - EIL (UCM)



Source: Own elaboration from the EIL-2008 (UCM)

Figure 4.- Propensity scores, before and after the matching - EILU (INE)



Source: Own elaboration from the EILU-2014 (INE)