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IZA DP No. 12033

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Does It Pay off and for Whom?**

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ABSTRACT

International Mobility of Students in Italy and the UK: Does It Pay off and for Whom?

International student mobility is the most recognised element of Erasmus+, a major EU policy. Not enough is known about the causal effect of studying abroad on labour market outcomes. This is because most of the existing studies dismiss selection bias: the different composition of students opting and not opting for studying abroad. The purpose of this paper is to answer the following three questions, whilst accounting for selection bias. First, does international student mobility (ISM) have an effect on labour market outcomes? Second, do the returns to ISM vary between two countries with contrasting labour market and education systems? Third, do the returns to ISM differ according to the socio-economic background of the students? Results are compared between Italy and the UK using Italian Institute of National Statistics and UK Higher Education Statistics Agency graduate survey data. Using propensity score matching, the returns to study-related stays abroad are estimated on a set of labour market outcomes around six to twelve months and three years after graduation for undergraduates (UK and Italy) and postgraduates (Italy only). Results indicate that mobility is positively associated with some outcome variables under scrutiny. Mobile graduates seem to benefit from better employment chances than non-mobile graduates. Returns to ISM tend to be slightly higher among graduates in Italy. Mobility seems to matter most for uptake and completion of further post-graduate studies in Italy. It is especially the socially disadvantaged mobile who opt for further education after graduation.

JEL Classification: I23, I24, I26

Keywords: international student mobility, mobility abroad, labour market outcomes, propensity score matching, Italy, UK

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1 Introduction

International student mobility (ISM)¹ which refers to students spending some time abroad during their degree programme at a home institute is the most recognised element of Erasmus+, a major EU policy which celebrated its 30th anniversary in 2017. It is clearly popular with an increase in student uptake from 3.2 to 284.1 thousands from 1987/88 to 2014/2015 (EC 2009, EC 2017a). This trend is unlikely to reverse but will probably even intensify in the future. A communication adopted by the European Commission in 2017 on ‘Strengthening European Identity through Education and Culture’ sets the vision of building a European Education Area by 2025, which also aims to make mobility a reality for all (EC 2017b).

Figure 1 shows the increase in Erasmus uptake since its creation for those seven EU countries with more than 10,000 students participating in Erasmus in 2014/15. Italy has the third and the UK the sixth highest number of students taking part in Erasmus across all European countries.

(Figure 1 about here)

In most EU countries the majority of students who temporarily study abroad are enrolled in an Erasmus programme (Hauschildt et al. 2015, p. 198, Figure 10.5). In Central and Eastern European countries, around 60 to 95% of mobilities abroad are funded by EU programmes. Italy and the UK represent typical Western European countries, with Erasmus mobilities accounting for 56% (Hauschildt et al. 2015) and 47% (Schnepf 2018) of students’ mobilities respectively.

Students participating in mobility programmes show generally high satisfaction with their experience abroad (Engel 2010, Waibel et al. 2017). More importantly however, experience at host universities during tertiary education can serve as a vital part for the acquisition of skills needed in globalised labour markets.

However, measuring the impact of studying abroad on labour market outcomes implies to take into account that students who opt for an exchange semester generally differ from non-mobile students in intrinsic characteristics like motivation, ability and socio-economic background. These characteristics are likely to be associated with labour market outcomes. If this so called ‘selection bias’ is ignored, the association between mobility and labour market outcome could be just due to different characteristics of the mobile and non-mobile and not to the consequence of ISM *per se*.

Recently, the number of studies taking selection bias into account for measuring the impact of studying abroad is augmenting. For example, Di Pietro (2015) and Parey and

¹ For the rest of the paper we will use the terms ‘studying abroad’ interchangeably with ‘mobile students’.

Waldinger (2011) use instrument variables (IV) to estimate the returns to mobility. Netz and Grüttner (2019), Jacob et al. (2018) and Rodrigues (2013) employ propensity score matching (PSM) methods. Nevertheless, existing studies rarely, and if so controversially, answer to the growing debate on whether studying abroad can mitigate existing inequality of opportunities, a question of great importance for policy design. Exceptions include Di Pietro (2015) and Netz and Grüttner (2019). Di Pietro using Italian data shows that the returns to ISM is higher for graduates with a poor family background. In the contrary, Netz and Grüttner (2019) find that studying abroad is more beneficial for students with privileged socioeconomic background in Germany.

The added value of this study is fourfold. First, it overcomes the common single country focus of most studies by comparing the returns to mobility of recent graduate cohorts in two European countries (UK and Italy). These countries differ in their education and labour market systems. Second, we estimate the impact of mobility on three outcome variables (employment status, managerial positions, completion of post-graduate studies) for both first degree and postgraduates. Third, results will be compared between graduates with high and low socio-economic background, thereby contributing to the controversial debate on who benefits most. Fourth, we attempt to account for selection bias by employing propensity score matching. More importantly, the richness of the micro data allows us to take both university and subject fixed effects into account as well as upper secondary school results. This increases the likelihood of properly controlling for selection bias into mobility.

The remainder of the study is structured as follows. Section 2 develops theoretically derived hypotheses and reviews existing studies. Section 3 focuses on the data and methodology used. Section 4 discusses the results and Section 5 concludes.

2 Theoretical considerations, literature review and value added

Does student mobility increase job related competencies and labour market outcomes?

Studies that investigate the 'causal effect' of study-related stays abroad by taking the selection bias into account are still relatively limited. To the best of our knowledge these include Messer and Wolter 2006, Salisbury et al. 2008, Oosterbeek and Webbink 2011, Parey and Waldinger 2011, Salisbury et al. 2013, Rodriguez 2013, di Pietro 2015, Sorrenti 2015, Waibel et al. 2017, Jacob et al. 2018, Petzold 2017a and 2017b, Netz and Grüttner 2019 and Waibel et al. 2018. These studies generally confirm that studying abroad is among other outcomes beneficial for a) job related competencies and b) labour market outcomes.

Job related competencies

Exploiting longitudinal data from a national study of US college students, Salisbury et al. (2013) report that while results are mixed depending on measures used, in general studying abroad improves *cultural competences*. Similarly Sorrenti (2015) shows that ISM is beneficial for the *language proficiencies* of Italian graduates. He uses population data and employs an IV approach. Messer and Wolter (2006) do not find any effect of studying abroad on the commencement of a *postgraduate project*. The authors rely on Swiss graduate census data and an IV approach.

Labour market outcomes

Petzold (2017a and 2017b) investigates how *studying abroad affects hiring* practices in Germany. He randomises the information on studies abroad across job applications and sends them to German employers. He finds that studying abroad decreases days required to wait for a response to an application for an internship (2017a) and that mobility does affect hiring decisions, especially for international job assignments (2017b).

Rodriguez (2013) and Jacob et al. (2018) use survey data from graduates of the years 1999/2000 and 2002/2003 from 16 European countries (REFLEX and HEGESCO data). These studies are, to the best of our knowledge, the only cross-national evidence available on the topic. Using propensity score matching Rodriguez (2013) shows that for a few countries (Poland, France, Czech Republic and Belgium) mobility experience is detrimental since it increases the time to *find a first job*.

The same study also concludes that *salary* measured in hourly earnings is slightly higher for mobile students compared to their non-mobile counterparts. Jacob et al. (2018) find heterogeneous returns across European countries. Along the same line Messer and Wolter (2006) do not measure any significant difference of salary between mobile and non-mobile graduates. This stands in contrast with Netz and Grüttner (2019) who report higher salaries for the mobile whilst exploiting data from German graduate panels and using propensity score matching.

Parey and Waldinger (2011) use the same German graduate data source as Netz and Grüttner (2019) but instead employ an instrumental variable approach to tackle the selection bias issue. The authors conclude that mobility is associated with a significant increase in *graduates' probability to work in a foreign country*. This result is confirmed for almost all 16 countries covered in Rodriguez (2013). Similar findings are observed with Dutch and Italian data by Oosterbeek and Webbink (2011) and Di Pietro (2015).

As far as the *employment probability* is concerned, di Pietro (2015) using one cohort (2004 graduates) of the same Italian data (ISTAT) exploited for this paper and employing a similar identification strategy as Parey and Waldinger (2011) finds that mobile students are more likely

to be employed three years after graduation than their non-mobile counterparts. Jacob et al. (2018) report that employability is not significantly related to ISM.

In sum, with the exception of the outcome variables “transition time to work” and “salary”, the majority of studies taking selection bias into account generally conclude that mobility exchange schemes are beneficial for job related competencies and labour market outcomes for the countries examined.

As a result we will test the following hypotheses:

Hypothesis 1: In Italy and the UK, mobility has a positive effect on labour market outcomes.

How do Italy and the UK compare?

Returns to study-related stays abroad are likely to be heterogeneous in the European Union since education supply and labour market demand for mobile students vary across countries (Jacob et al. 2018).

For this study, the choice of the UK and Italy derives from the stark contrast of their education systems and labour markets. Regarding the education system, the UK’s higher education sector is much more stratified than the Italian one (Brennen et al. 2009), so that strategies for differentiating oneself from other students – for example by studying abroad – could be much more beneficial in Italy than in the UK. Furthermore, higher education enrolment covers almost half of the young people in the UK but just one fifth in Italy (Eurostat 2017). Even though the supply side of graduates is much lower in Italy, graduates’ chances relative to those in the UK also depend on the demand side of the labour market. Compared to other European countries, the Italian labour market is relatively rigid. Using the OECD indicator on ‘Protection of permanent workers against individual and collective dismissals’, Italy scores highest together with Belgium and the Netherlands while protection is the lowest in the UK among 21 European countries covered in the data set (OECD 2017). At the same time, unemployment especially among young people aged below 25 was (and still is) higher in Italy (around 29%) than in the UK (around 21%) for 2011, the most recent year of graduation covered in our data (Eurostat 2018). The lower flexibility of labour markets makes the transition from tertiary education to work more difficult for Italian than for UK students. However, according to Van Mol (2017), Italian employers value experience abroad more than those from the UK, with about one third of interviewed employers in Italy agreeing that studying abroad is important compared to just 10% for the UK. As a consequence studying abroad could serve three purposes particularly for Italian students: first, it might help students to distinguish themselves from their fellow students; second, it could improve language skills and third, it is valued by the employers. In the

UK, these issues are not as pressing, since most of international companies utilise English as their main language while at the same time barriers for entering the labour market are lower.

Table 1 about here

Students' decision to go abroad should also depend on the expected benefits associated with mobility. As shown in Table 1 (the data will be described in detail in the next section), the pattern of mobility uptake differs greatly between the UK and Italy. Mobility uptake for first degree graduates is similar across the two countries with figures amounting to respectively 5.9% in Italy and 4.7% in the UK. In the UK, study related stays abroad are chosen mainly to improve language skills since as many as 58% of all mobile students study languages in contrast to Italy where it is just 22%. The predominant part of Italian mobile students graduate in social science subjects (71%). However, still almost 30% of all Italian mobile students graduate in a technical science subject (like architecture, engineering, physics etc.) compared to less than half of that in the UK. Once the focus is on postgraduates (data are available only for Italy), almost 40% of all mobile students study technical sciences (23% of those being engineering). In both countries however mobile students are underrepresented in education and agriculture subjects.

As a consequence, given greater barriers for labour market entry, a larger value attributed to stays abroad and the spread of mobility across more subject areas, it is likely that Italian graduates profit more from mobility than those in the UK.

Hypothesis 2: Mobility has a greater impact on employment chances in Italy than in the UK.

Does the impact of student mobility differ between the advantaged and disadvantaged students?

Does the effect of studying abroad differ between advantaged and disadvantaged students. Rational choice theory (i.e. Breen and Goldthorpe 1997) would predict that for students with high socio-economic background benefits of studying abroad outweigh cost of doing so (since they have funds, experiences and networks available), while it should be the other way round for their counterparts with a lower background. Theoretically, it is also possible to assume that mobility schemes can especially benefit the socio-economically disadvantaged graduates if studying abroad compensates for limited school opportunities faced earlier in life. In this case, the return to ISM might be higher for graduates with a lower socio economic background. Similar findings would be observed if income constraints lead to consider ISM more as an investment than as a consumption good. In that case, students coming from poor families might opt for destination countries which would increase their labour market productivity (Waibel et al. 2017).

Evidence on this topic is rather limited (Bilecen and Van Mol 2017) and results of studies examining heterogeneous impacts of mobility are controversial. Di Pietro (2015) and Sorrenti (2015), using Italian data, conclude that mobility is more beneficial for disadvantaged students when the focus is on employment probability and language proficiency. Using German graduate survey data collected by the Higher Education Information System (HIS, now DZHW), Parey and Waldinger (2011) equally find that the effect of studying abroad on labour market mobility after graduation is higher for disadvantaged students. However, results differ greatly when the focus is on graduates' salaries. Using the same data source as Parey and Waldinger (2011), Netz and Grüttner (2019) find that it is graduates with higher educated parents benefitting more. This leads the authors to conclude that study related stays abroad increase income inequality.

To some degree, the existing controversy could be shaped also by the very specific characteristics of disadvantaged mobile students. Students from disadvantaged backgrounds are underrepresented among mobile students in Europe (Hauschildt et al. 2015; Schnepf 2018). Underprivileged students evaluate studying abroad as less beneficial (Loerz et al. 2016; Salisbury 2008), perceive finances and separation from family as much more pressing (Orr et al. 2011) and have lower language skills (Loerz et al. 2016) than privileged students. Furthermore, at least in the UK disadvantaged students are underrepresented in prestigious universities that receive most of the mobility grants (Schnepf 2018). As a consequence, those disadvantaged who still decide to be mobile are very likely to differ much more from other disadvantaged peers than mobile advantaged compared to their peers. Hence, measuring a causal effect by comparing the disadvantaged to their equally underprivileged counterparts is likely to be much more subject of bias due to unobservable characteristics among the group of the disadvantaged than the advantaged students.

In addition, the results might differ across the examined outcome variables. Income and uptake of managerial positions derive from mechanisms of selection that can be attributed to cultural capital and reproduction (i.e. Bourdieu and Passeron 1990), while compensation could more likely apply for acquisition of skills (like language or uptake of further studies).

As a consequence we assume:

Hypothesis 3: there is no clear heterogeneous impact of mobility for graduates with differing socio-economic background.

3 Data and methodology

Data

UK data derive from merged graduate population and survey data of the UK Higher Education Statistics Agency (HESA). The Italian data stem from graduate surveys conducted by the Italian National Institute of Statistics (ISTAT) on graduates and postgraduates. For the UK, the 2006/07, 2008/9 and 2010/11 and for Italy the 2004, 2007 and 2011 graduate cohorts are considered for the analysis.

UK data set

HESA covers information on the entire population of students registered in UK higher education institutes each year ('HESA Student Record Data'). For the purpose of this paper, HESA extracted the population of all UK domiciled full-time first degree graduates studying a degree with expected length of study of at least 3 years, excluding those graduates who were not on the same course at the same higher education provider in the two years prior to the graduation year. This extract covers around 70% of the entire population of all graduates.

This specific selection of graduates rules out that domestic or subject changes or other international mobility enter as unobserved variables into the analysis. From the population of graduates, data were drawn with a response rate of around 80% six months after graduation covering around 382,000 students in 161 universities for the three merged cohorts (after exclusions, see below). For this group, weights are not provided by the data holder. Respondents to this survey called 'HESA Destinations of Leavers from Higher Education Record' were then again contacted three years after graduation covering around 70,000 responding students in 160 universities. For the latter survey called 'HESA Destinations of Leavers from Higher Education Longitudinal Record', the response rate was only 18%. While weighting taking students' population characteristics into account is applied for this survey, this is unlikely to solve the problem of non-response bias normally associated with low response.

Students studying on 'combined' subject areas, hence several subjects together, were not included in the analysis (around 0.3 % of the total sample).

Italian data set

ISTAT data derive from surveys on the population of students of Italian universities three (cohort 2004) or four years (cohorts 2007 and 2011) after graduation. The data cover first degree graduates and postgraduates. Some retrospective information for one year after graduation is collected as well. The sample design is stratified along universities, gender and type of the subject studied. The samples of first degree graduates and postgraduates represents around 20% of their respective populations.

Postgraduates sampled in 2004 are excluded from the analysis. This is because these students entered university before the implementation of the Bologna reform in the academic year

2001/02 and this reform had a major impact on the structure of the university degrees in Italy. As for the UK, graduates who changed universities during their course of studies are deleted from the sample.

First degree graduates in our sample are those who completed their first degree lasting officially three years (so-called 'Laurea triennale') within five years. Postgraduate students are students having completed the Laurea triennale and an additional two years of study. Data for them derive only from the 2007 and 2011 cohorts of students.

Based on a merged sample of the three cohorts, the overall student response rate is 70% leading to a sample of around 56,000 graduates in 84 universities and 34,000 postgraduate students in 82 universities after exclusions.

Similarities between both data sets

The Italian and UK data are unusually rich regarding the information provided. The data include the field of study and the university attended by the graduates. This makes it possible to take university fixed effects into account and, hence, to control for differences in university quality associated with both mobility uptake and labour market outcomes. The inclusion of university fixed effects is critical to disentangle the effect of university from the one of participation in mobility programmes. Second, quite unusual for graduate data, student data include information on upper secondary school results which can be used as a proxy for ability when entering the mobility scheme. Third, the two data sets include measures on a range of labour market outcomes that are used in the empirical analysis to measure the returns to ISM. In addition, both data sets have information on the family background of the students.

However, both data sets differ in a number of points. In particular, UK data cover first degree graduates while Italian data include also postgraduates. Furthermore, the labour market indicators are not all identical across the surveys. In addition, the covariates included in the empirical analysis might slightly vary between the two countries. More details on variable definitions by data set are provided in the appendix.

Item non-response

For the UK, item non-response is 18% for socio-economic background, these students are not included in the analysis. In addition, for almost 30% of students upper secondary school degree information is not available. For these students, the average is imputed and a dummy created that is set equal to one for imputation. Other items have a non-response of less than 1%. For the Italian 2004 cohort, the university identifier is missing for those students who graduated in universities with less than 750 students. These students are not included in the analysis.

Methodology

It is difficult to measure the 'effect' of studying abroad on labour market chances since a considerable part of the differences in career progression between graduates with and without mobility experience will be due to a non-random selection into mobility.

In this study, PSM is used to take account of non-random selection. For both countries as well as graduates and postgraduates separately, PSM matches graduates with studying abroad experience to similar adults without (called a 'control group'). The control group is equivalent to the mobile on a range of covariates which are similar for both countries: gender, upper secondary school results, socio-economic status, age group, subject studied, region, cohort and most importantly university attended. The 'effect' of mobility on labour market chances is estimated by the difference in the outcome variables between the mobile and the control group.

In that it compares mobile with matched non-mobile graduates, we use PSM to measure the so-called 'average treatment effect on the treated' (ATT): that is, how does mobility experience change the labour market chances of the mobile compared to what they would have experienced had they not studied abroad.

The advantage of PSM as compared to regression analysis is that it is non-parametric, relaxes any linearity assumption and restricts the analysis to samples of mobile and non-mobile students with similar propensity scores (common support condition). Similar to regression analysis, however, PSM relies on the assumption that all relevant differences between the mobile and their control group can be captured by observable variables covered in the data set (the so-called 'conditional independence assumption' (CIA)). This assumption therefore is more likely to hold if the data set is rich in individual background information. The Italian and the UK data include a large set of covariates. However, as discussed above, especially for the students with low socioeconomic background, additional unobservable characteristics like motivation and perseverance might be at play. The estimated 'effect' of mobility on labour market chances might therefore be biased. As a consequence, a clear causal link between mobility and labour market chances cannot be claimed in this study. Nevertheless, the possible bias might be small, because graduates' unobservable characteristics of importance for mobility and labour market chances should be proxied to some extent by variables such as upper secondary school results, university attended and subject studied.

The robustness of results was checked by comparing different matching strategies (nearest neighbour matching with replacement applying caliper and kernel matching). For the sake of brevity, we only present the Kernel based estimates.

Outcome variables are provided by time after graduation (six months (UK), one year (Italy) and three to four years (UK and Italy)) and degree (first graduate degree (UK and Italy) and postgraduate degree (Italy)). They comprise employment probability (dummy variable equal to one if the respondent was working compared to the unemployed for the UK and Italy 3 years after graduation). For Italy, the employment measure differs for one year after graduation: the dummy is equal to one if the respondent was working, and equal to 0 if the respondent was not working but looking for work. For the UK, a further outcome variable is 'reaching a higher managerial position' which is given if graduates say they have a 'higher or lower managerial professional occupation' in comparison to 'intermediate occupations', 'small employers and own account workers', 'lower supervisory and technical occupations', 'semi-routine occupations', 'routine occupations' and 'never worked/long-term unemployed'. For Italy, an additional outcome variable on uptake of postgraduate studies (dummy that is one if first degree graduates completed postgraduate studies or are still studying three years after graduation, 0 otherwise) is examined.

4 Results

In Italy and the UK, the distribution of mobile students is highly positively skewed (results not shown in the tables). In Italy, taking graduates and postgraduates together 5 universities out of 84 universities do not have any students studying abroad while 19% of universities have more than 15% of students going abroad. The picture is similar for the UK: 28 out of 161 universities do not have any mobile students. At the 90th percentile of the university distribution, almost 10% of students study abroad. Schnepf (2018) shows that around 30% of variation in students' mobility uptake can be explained by variation between higher education institutes in the UK. This indicates the importance of students' university choice and the need to take university enrollment into account for measuring the impact of mobility on labour market outcomes.

Who are the mobile in Italy and the UK?

As discussed above, any kind of analysis examining the impact of mobility on labour market outcomes, needs to consider selection into mobility. Table 2 shows its extent. Significant differences at the 1% level are printed in bold. In both countries, individuals with low socio-economic background (measured with parental occupation in the UK and parental education in Italy) are less likely to be mobile. This trend is especially pronounced for first degree graduates in Italy, where 52% of non-mobile students have parents who both did not complete lower secondary education compared to just 35% of the mobile. Not only the socially disadvantaged are underrepresented among the mobile, but so are children with worse upper secondary school results. In the UK, two measures are used proxying low grading of school results: a first quality measure identifies those students who did not achieve one A mark (which is the best mark) for their upper secondary school leaving results (generally called 'A-levels'). A second

quantity measure captures those students who graduated from school with less than three A-levels. Mobile students outperform non-mobile students for both variables. The same pattern is found for Italy, where students receive a final upper secondary school score ranging from 60 to 101. While non-mobile students' average score is around 76 points, the mobile rank is significantly higher with 79 points. For postgraduates a similar difference can be found, even though at a higher score level indicating that further study depends on school proficiency.

Table 2 about here

Some interesting composition differences appear between both countries. While female graduates are more likely to participate in ISM in the UK due to them being more prone to study languages, in Italy there is almost gender parity at least among postgraduate students. Older students are underrepresented in both countries. The association between ISM and the other age groups differs across the two countries, probably reflecting variation in the duration of first degree programme which is just 3.3 years on average in the UK compared to 3.7 years in Italy.

How do students studying abroad fare compared to the non-mobile?

If we do not take compositional differences discussed above into account, how do labour market outcomes of mobile graduates compare to those who did not study abroad?

Table 3 about here

As discussed above, outcome variables are measured six months to one year and three to four years after graduation. Summary statistics for mobile and non-mobile graduates broken down by degree level and country are displayed in Table 3.

For UK graduates and Italian postgraduates the employment probability of students studying abroad is slightly but significantly higher compared to that of the non-mobile ones. This is true both in the short and long term. In the contrary, the employment probability of first degree graduates is significantly lower for mobile students one year after graduation in Italy and insignificant three to four years after graduation.

UK graduates are slightly more likely to have a professional or managerial profession 6 months after graduation. However, the opposite is observed 3 years after graduation. It is important to note that the percentage point difference triples if weighting is not used, showing the extreme sensitivity of results to weighting due to very high non-response. As a consequence, the UK data results for three years after graduation need to be interpreted carefully.

In Italy, 66% of mobile but only 46% of the non-mobile graduates have either completed a postgraduate degree or are still studying 3 to 4 years after graduation. This strong association

of mobility and further studies is confirmed with UK data, which does not include information on completed postgraduate studies but uptake of studies one year after graduation. The mobile are around 1.4 times more likely to enroll into postgraduate studies than the non-mobile (results not shown). This result could be either due to the fact that mobile students are anyway more interested in postgraduate studies (selection bias) or that studying abroad increases students' interest and motivation in pursuing further studies.

What is the 'effect' of mobility on labour market outcomes?

A considerable part of the difference between the mobile and non-mobile graduates presented in Table 3 is due to the non-random selection of students into mobility. As was shown in Table 2, mobile graduates have better school leaving certificates and higher parental background than their non-mobile counterparts. The extent of non-random selection is also impacted upon the specific institutional settings found, especially students allocation to universities. To test the hypotheses developed in Section 2, selection bias needs to be considered. As described in the 'Data and methodology' section, we employ PSM and estimate the returns to mobility on each of the outcome variables separately by country, time after graduation and socio-economic group.

Generally, the implementation of PSM shows that, as expected, the propensity score for mobile graduates is higher than for the non-mobile peers. Limiting the estimation to the common support area has no effect on the sample sizes. Indeed, in the UK, the highest exclusion due to off support amounts to 0.12% of the treated graduated for the outcome variable 'Manager' three years after graduation, whilst for Italian data never more than 0.03% of observations are excluded.

A general way of assessing the quality of the matching is to examine the balance of the covariates between the mobile and non-mobile matched graduates. To do this we compute the standardised bias, i.e. the difference in means of the covariates between mobile and matched non mobile graduates, divided by the standard deviation (Rosenbaum and Rubin, 1985). The empirical literature generally assumes a standardised bias of 5% after matching to be reasonable (Caliendo and Kopeining, 2008, p. 48). For the UK, the mean bias is never above the 5% threshold after matching. Also for Italian data, the 5% threshold is met for 12 out of 15 models. For the remaining three models the mean bias is between 5 and 7%. The mean bias for postgraduates is always below 2.5%.

As discussed above, even though a rich set of variables is available for the matching process including university and subject studied fixed effects as well as secondary school leaving results, the association between mobility and the outcome variables could still be biased up- or downwards if the CIA assumption is not met.

Turning to the matching results, Tables 4 displays percentage point differences for labour market outcomes between mobile and non-mobile graduates employing PSM analysis. We also estimated logistic regressions which in terms of direction and significance generally correspond to the PSM results (results are presented in the appendix). However, since PSM produces consistent estimates under weaker assumptions than those required with the logistic regression model, the discussion of the results is based on PSM.

Does ISM have a positive effect on labour market outcomes in Italy and the UK? (Hypothesis 1)

Out of nine PSM estimates (combinations of outcome variables, graduate programme and country) for all graduates the return to mobility is positive and significant for four model specifications, while in the remaining five models the effect of studying abroad is not significantly related to the outcome variable.

Most notable is that mobility is not significantly impacting on short term employability, neither in Italy (where the coefficient for postgraduates is only significant at the 10% level) nor for the UK. In contrast however, three to four years after graduation, the Italian postgraduates and UK graduates fare slightly better than their non-mobile counterparts.

PSM results indicate that the mobile graduates have an about 3 percentage point higher likelihood taking up a managerial position compared to their non-mobile counterparts six months after graduation in the UK. However, three years after graduation the effect has subsided into insignificance.

Italian mobile students who have been studying abroad are considerably more likely to complete postgraduate studies or to still study three to four years after graduation. 11 percentage points more mobile than non-mobile students have completed or are currently enrolled in postgraduate degree programmes. Therefore, it appears that mobility programmes are likely to foster uptake of further study.

Does mobility have a greater impact on employment chances in Italy than in the UK? (Hypothesis 2)

As discussed above, given the rigidness of the Italian compared to the UK labour market, the higher appreciation of mobility by Italian compared to UK employers and the distribution of mobile students across many subjects in Italy compared to the concentration of mobile students in language programmes, it was assumed that the return to mobility is higher for Italian than for UK graduates. However, results are mixed. There are no significant country differences if the focus is on first degree graduates. For Italian postgraduates however mobility tends to have a slightly larger positive effect than for UK graduates over the short and long run. While mobile UK graduates have a 1.4 percentage point higher employment probability than

the non-mobile graduates, the corresponding figure for Italian postgraduates is equal to is 2.1 percentage points 3 years after graduation. Within the first year of graduation, mobile Italian postgraduates are 1.6 percentage points better off (significant at the 10% level only), while there are no significant differences between the mobile and non-mobile UK graduates.

As a consequence, results indicate that Italian postgraduates increase their employment chances slightly more than UK graduates by studying abroad, while this is not the case for Italian first degree graduates.

Are the returns to mobility heterogeneous across socio-economic groups? (Hypothesis 3)

Taking all 18 PSM results together (9 results for each socio-economic group), we observe that the return to mobility is higher for the disadvantaged group compared to the advantaged counterpart in three cases (Italian postgraduates and UK graduates on employment chance six months to one year after graduation, Italian graduates on completion or uptake of postgraduate studies), while the return to mobility does not significantly differ for the remaining six models by socio-economic group.

In terms of effect size, the greatest advantage appears for graduates with mobility experience and low socio-economic background. The disadvantaged mobile graduates have an around 15 percentage points higher uptake of postgraduate studies compared to their peers. For the mobile graduates this difference amounts to 8 percentage points only. Mobility might therefore compensate a possible earlier disadvantage faced by students with lower parental background as it allows them to increase their chance to reach higher education credentials. Since on average higher education leads to higher income, mobility could decrease income inequalities between advantaged and disadvantaged graduates.

5 Conclusions

The added value of this study is fourfold. First, this study overcomes the common single country focus of most studies by comparing the returns to mobility of recent graduate cohorts in two European countries. These countries differ in their education and labour market systems. Second, we estimate the impact of mobility on a range of outcome variables (employment status, managerial positions, completion of post-graduate studies) for both first degree and postgraduates. Third, results are compared between graduates with high and low socio-economic background, thereby contributing to the controversial debate on who benefits most. Fourth, we attempt to account for selection bias by employing propensity score matching. More importantly, the richness of the micro data allows us to take both university and subject

fixed effects into account as well as upper secondary school results. This increases the likelihood of properly controlling for the selection bias into mobility.

The following three research questions were addressed. First, are study-related stays abroad beneficial in terms of labour market outcomes? Second, are returns to mobility higher in Italy than in the UK? Third, are there any heterogeneous effects of ISM by socio-economic background?

The results suggest that ISM tends to improve career progression. However the returns to mobility differ greatly depending on which outcome variables, time intervals passed after graduation, study programmes and countries are under scrutiny. Mobility is not significantly impacting on short term employability, neither in Italy nor in the UK. In contrast, three to four years after graduation, the Italian postgraduates and UK graduates benefit from slightly higher employment compared to their non-mobile counterparts. The mobile graduates in the UK are more likely to take up managerial positions compared to the non-mobile graduates 6 months after graduation, but the effect disappears after 3 years. However, Italian mobile graduates are 11 percentage points more likely than non-mobile students to have completed or be enrolled in postgraduate degree programmes three years after graduation. This suggests that mobility programmes foster uptake of further study.

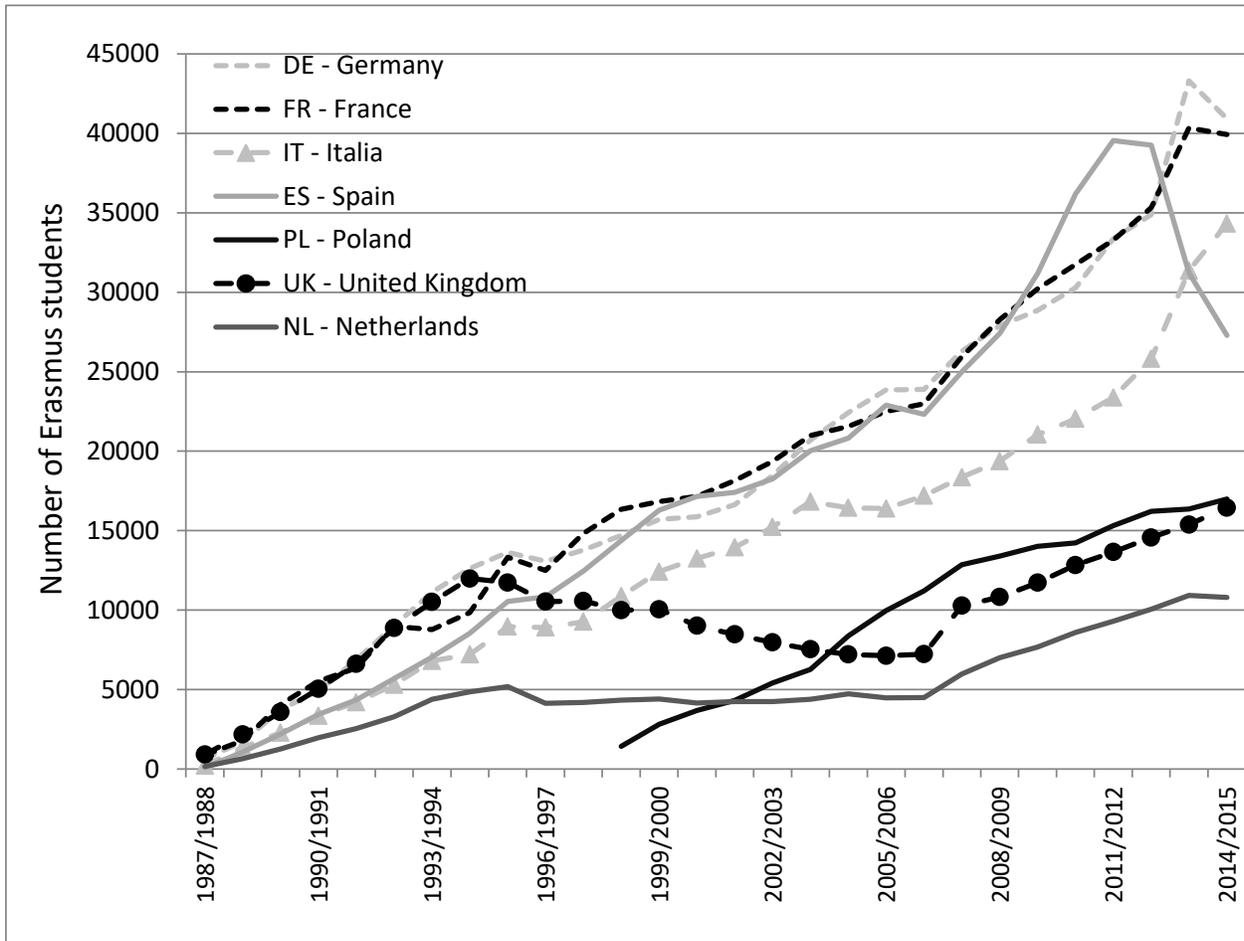
The rigidity of the Italian as compared to the UK labour market, the lower stratification of the Italian educational system as well as the distribution of mobile students across many subjects in Italy compared to the concentration of mobile students in language programmes in the UK led us assume that the return to mobility is higher in Italy than in the UK. Results are however mixed. Overall, mobility seems to be slightly more beneficial for Italian postgraduates compared to UK graduates both in the short and long run, though this difference is significant only one year after graduation. In addition there is no significant difference between Italian and UK first degree graduates for what regards the chance to be employed.

For three of nine PSM estimates, the socio-economically disadvantaged students experience a significantly larger return to mobility (Italian postgraduates and UK graduates on employment chance six months to one year after graduation, Italian graduates on completion or uptake of postgraduate studies), while there is no significant difference for the remaining six PSM results. Study-related stays abroad are strongly associated with the probability for Italian graduates to enroll in post graduate studies. Whilst the mobile graduates with a favourable family background have an around 8 percentage points higher uptake of postgraduate studies compared to their peers this difference amounts to 15 percentage points for students with a poor socio-economic background. Given that postgraduate studies are associated with higher income, this heterogeneous effect of mobility in favour of socio-economically disadvantaged groups might contribute to a decrease of income inequalities among graduates in the future.

The limitations of this study are the following: the UK survey conducted three years after graduation was subject to large non-response. In addition, not all of the outcome variables are available for the two countries and time periods. Given that the data are based on national data sets, there are slight differences in the variable choices made for the analysis. The 'Graduate Tracking Survey', which is currently initiated by the European Commission Directorate-General for Education, Youth, Sport and Culture, could provide the possibility to investigate students' mobility uptake and its effects in a cross-national framework for a great number of outcome variables in the future.

Figures and tables

Fig. 1: Number of Erasmus students since 1987, by country



Source: Number of Erasmus students refers to mobilities in all tertiary programmes and derive from European Commission (2009, Annex 1) for 1987/88 to 2006/07, from European Commission (2013, Annex 1, Part 2) for 2008/09 and 2010/11, from European Commission (2014, Annex 1) for 2012/13 and European Commission (2017a, Annex 1) for 2014/15.

Table 1: Sample size, percent enrolled, percent mobility uptake and percent of all mobile students by subject area, graduate programme and country

		Italy				UK							
		First degree graduates		Postgraduates		First degree graduates							
		Total	% of all enrolled	% mobility uptake	% of all mobile students	Total	% of all enrolled	% mobility uptake	% of all mobile students	Total	% of all enrolled	% mobility uptake	% of all mobile students
Social sciences	Languages	4,648	8.2	16.0	22.4	3,902	11.6	19.3	17.3	94,686	24.8	10.9	57.8
	Social Sciences	18,229	32.3	7.6	41.8	12,810	38.0	13.8	40.6	114,923	30.1	3.1	20.3
	Law	3,841	6.8	4.7	5.5	1,703	5.1	9.5	3.7	18,575	4.9	6.8	7.1
	Education	1,421	2.5	3.7	1.6	798	2.4	3.3	0.6	17,030	4.5	1.2	1.1
	ALL	28,139	50.0	8.4	71.3	19,213	57.0	14.1	62.3	245,214	64.2	6.3	86.3
	Technical sciences	Architecture	2,461	4.4	8.3	6.2	1,431	4.3	15.7	5.2	7,531	2.0	2.7
Agriculture		1,115	2.0	5.1	1.7	773	2.3	11.6	2.1	3,687	1.0	0.3	0.1
Engineering		5,853	10.4	4.8	8.4	6,528	19.4	15.0	22.6	16,867	4.4	3.0	2.9
Physical + Mineral		4,100	7.3	3.8	4.8	2,895	8.6	9.2	6.1	68,679	18.0	1.9	7.4
Medicine		14,722	26.1	1.7	7.6	2,897	8.6	2.6	1.8	40,135	10.5	1.0	2.2
ALL		28,251	50.1	3.4	28.7	14,524	43.0	11.3	37.7	136,899	35.8	1.8	13.7
Total	56,390	100.0	5.9	100.0	33,737	100.0	12.9	100.0	382,113	100.0	4.7	100.0	

Note: UK data refer to the population data of graduates participating in the survey taking place 6 months after graduation. For Italy, the data refer to a sample of graduates and postgraduates three years after graduation. Totals for the UK are rounded to the next 5. Results are unweighted for the UK and Italy. Subjects are ordered by % of mobility uptake of graduates in Italy.

Table 2: Percent of individual characteristics by mobility, graduation programme and country

% of	Italy						UK		
	First degree graduates			Postgraduates			First degree graduates		
	Mobile	Non mobile	Difference	Mobile	Non mobile	Difference	Mobile	Non mobile	Difference
Female	54.7	55.3	0.6	50.5	52.8	-2.3	64.8	56.4	8.4
Low SES	35.4	52.3	-16.9	33.6	46.5	-12.9	33.1	44.2	-11.1
Italian	98.8	98.7	0.1	99.5	99.6	0.0	na	na	Na
Age <=22	35.9	26.0	9.9	0.0	0.0	0.0	69.6	76.4	-6.8
Age 23 + 24	50.0	43.4	6.5	19.3	15.6	3.7	26.9	15.0	11.9
Age 25-29	12.6	17.7	-5.1	77.4	67.8	9.7	2.5	4.5	-2.0
Age 30+	1.6	12.8	-11.3	3.3	16.6	-13.4	1.1	6.1	-5.0
% having no A mark	na	na	na	na	na	na	11.2	18.3	-7.1
% less than 3 A levels	na	na	na	na	na	na	2.2	5.1	-2.9
Exam score	78.6	76.0	2.7	87.7	85.5	2.2	na	na	na
Ability missing	na	na	na	na	na	na	67.6	69.0	-1.4
Social Sciences	71.3	48.6	22.8	62.3	56.2	6.1	86.3	63.1	23.2

Note: The table shows the percent of individual characteristics by group. For example, 54.7% of the mobile first degree graduates in Italy are female. The clustering of students in universities is taken into account for the calculation of standard errors. Significant differences at the 1 percent level are printed bold. For the UK, results are presented for the 382,113 graduates taking part in the 6 months survey. For Italy, the results for undergraduates are based on the 56,390 students whilst the sample of postgraduates amounts to 33,737. All results are unweighted. na stands for “not available”.

Table 3: Percent employed, manager, enrolled or completed in postgraduate education and in full-time or wished part-time by mobility group, graduate programme and country

		Italy						UK		
		First degree graduates			Postgraduates			First degree graduates		
		Mob ile	Non mobile	Differ ence	Mob ile	Non mobile	Differ ence	Mob ile	Non mobile	Differ ence
<= 1 year	Employed	55.5	62.2	-6.7	66.6	63.3	3.4	90.6	90.0	0.6
	Manager	na	na	na	na	na	na	35.3	34.2	0.9
Three to four years	Employed	88.5	89.3	-0.8	95.1	92.3	2.8	97.5	96.8	0.7
	Manager	na	na	na	na	na	na	48.3	49.9	-1.6
	Enrolled or completed post-grad	66.1	45.6	20.5	na	na	na	na	na	na

Note: Significant differences at the 1 percent level are printed bold. All results are unweighted with the exception of the results based on the sample of UK graduates 3 years after graduate. The clustering of students in universities is taken into account for the calculation of standard errors. Na stands for “not available”.

Table 4: Percent point difference of labour market outcomes between mobile and other graduates using propensity score matching combined with kernel by country and graduate group

			Italy		UK
			First degree	Postgraduates	First degree
six month to one year	Employed	Low SES	-3.7	2.7	1.3
		High SES	-0.5	0.5	-1.3
		All	-2.0	1.6	-0.3
	Manager	Low	na	na	3.2
		High	na	na	3.5
		All	na	na	3.4
Three to four years	Employed	Low	1.2	2.1	1.0
		High	0.6	2.1	2.0
		All	0.9	2.1	1.4
	Manager	Low	na	na	0.0
		High	na	na	-1.5
		All	na	na	-0.4
	Completed post grad studies or still studying	Low	14.5	na	na
		High	7.9	na	na
		All	10.8	na	na

Note: Significant differences at the 5 percent level are printed bold and at the 10% level only italics. Standard error estimates for propensity score matches do not take into account that propensity scores are estimated. 'na' stands for "not available".

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HESA Destinations of Leavers from Higher Education Record 2006/07, 2008/09 and 2010/11
HESA Destinations of Leavers from Higher Education Longitudinal Record 2006/07, 2008/09 and 2010/11
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Appendix

International Mobility of Students in Italy and the UK: Does it pay off and for whom?

Table A1: Definition of variables

Outcome variables	Italy	UK
<i>Six months (UK) to one year (Italy) after graduation</i>		
Employment status	Dummy variable equal to one if the individual is working, 0 if unemployed.	
Manager	na	Dummy variable equal to one if the individual holds a professional occupation ('higher managerial and professional occupations' and 'lower managerial and professional occupations'). 0 otherwise ('intermediate occupations', 'small employers and own account workers', 'lower supervisory and technical occupations', 'semi-routine occupations', 'routine occupations' and 'never worked/long-term unemployed').
<i>Three to four years after graduation</i>		
Employment status	like for 6 months data	
Manager	na	like for 6 month data
Postgraduate (ongoing or finished)	Variable equal to one if the respondent reports to be enrolled in postgraduate studies three years after graduation. <i>Used only for the sample of undergraduates</i>	
Control variables		
Mobility	Dummy variable =1 if the respondent has participated to a mobility program during the university studies, 0 otherwise	Dummy variable =1 if university marks students to have participated in Erasmus or having studied abroad; 0 otherwise

Note: 'na' stands for 'not available'.

Table A1 continued

	Italy	UK
Low grade at the high school leaving exam-	Variable equal to one if the respondent scored lower than 75, zero otherwise This dummy variable is derived from the score obtained at the high school exit exam which ranges between 60 to 101.	<u>Quality measure:</u> Dummy variable = 1 if the student did not achieve one A mark for his A level result; 0 otherwise. <u>Quantity measure:</u> Dummy variable = 1 if student has less than 3 A-levels Missing values are imputed at the average. A dummy being equal to 1 if imputation took place is used in the model.
Female	Dummy variable equal to one if the respondent is a female, zero otherwise	
Citizenship	Dummy variable equal to one if the respondent has the Italian citizenship, zero otherwise.	na
Age at graduation	Four age dummy variables respectively equal to one if the respondent is 22 years old or less; 23-24 years old; 25-29 years old or 30 years old or more; otherwise 0.	
Low socio economic background	Variable equal to one if both parents have reached lower secondary education or if the level of education of one parent corresponds to upper secondary education while the second parent has a lower educational level, zero otherwise	Dummy variable equal to one if at least one parent holds a professional occupation ('higher managerial and professional occupations' and 'lower managerial and professional occupations'). 0 otherwise
Field of Study	14 field of study dummies: sciences, chemistry and pharmacy, geo-biology, medicine, engineering, architecture, agriculture, economics and statistics, political sciences, literature, linguistic studies, education, psychology	20 field of study dummies: medicine, subjects aligned to medicine, biology, veterinary sciences and agriculture, physical sciences, mathematical sciences, engineering and technology, computer sciences, minerals technology, architecture, social studies, law, business, communications, antique languages, European languages, non-European languages, history and philosophy, art and design, education.
University	84 university dummies	161 university dummies
Regions	Regional dummies are included. The territory is divided into 20 NUTS2 regions. The Regions are <i>Piemonte, Valle d'Aosta, Lombardia, Trentino Alto Adige, Veneto, Friuli Venezia Giulia, Liguria, Emilia Romagna, Toscana, Umbria, Marche, Lazio, Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, and Sardegna</i>	Dummies for Scotland, Wales, Northern Ireland and England covering the regions of the universities attended
Graduate Cohort	One dummy variable for each graduate cohort (2004, 2007 and 2011)	Dummy for each graduate cohort (2010/11 control group)

Table A2: Probabilities of being employed or being a manager for the UK first degree graduates, 6 months after graduation. Logistic regression results.

	Probability of being employed			Probability of being a manager		
	All	Low SES	High SES	All	Low SES	High SES
Mobility	0.108*** (0.0387)	0.263*** (0.0735)	0.0267 (0.0422)	0.174*** (0.0267)	0.124*** (0.0454)	0.208*** (0.0331)
Female	0.468*** (0.0182)	0.453*** (0.0234)	0.482*** (0.0227)	-0.252*** (0.0101)	-0.234*** (0.0154)	-0.267*** (0.0134)
No "A" Mark	-0.0770** (0.0326)	-0.107** (0.0432)	-0.0534 (0.0390)	-0.166*** (0.0188)	-0.220*** (0.0293)	-0.130*** (0.0248)
Less than 3 A-levels	-0.142*** (0.0304)	-0.136*** (0.0362)	-0.134*** (0.0458)	-0.178*** (0.0254)	-0.211*** (0.0351)	-0.133*** (0.0370)
Ability measure missing	-0.144*** (0.0501)	-0.145*** (0.0524)	-0.148** (0.0595)	-0.114*** (0.0224)	-0.241*** (0.0332)	0.0109 (0.0310)
Low Socio Economic Status	-0.122*** (0.0149)			-0.0926*** (0.00960)		
25-29 years old	-0.0234 (0.0352)	-0.0493 (0.0420)	0.00840 (0.0543)	0.432*** (0.0238)	0.395*** (0.0298)	0.513*** (0.0403)
23-24 years old	-0.0672*** (0.0215)	-0.0766** (0.0316)	-0.0565* (0.0289)	0.291*** (0.0136)	0.295*** (0.0203)	0.286*** (0.0183)
Age 30 or more	-0.459*** (0.0378)	-0.519*** (0.0442)	-0.368*** (0.0630)	0.535*** (0.0247)	0.409*** (0.0325)	0.751*** (0.0389)
Constant	7.401*** (0.229)	7.263*** (0.408)	7.487*** (0.268)	5.765*** (0.222)	5.998*** (0.341)	5.407*** (0.305)
Observations	293,114	132,046	160,883	270,448	120,380	150,063
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
University Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Probabilities of being employed or being a manager for the UK first degree graduates, 3 years after graduation. Logistic regression results.

	Probability of being employed			Probability of being a manager		
	All	Low SES	High SES	All	Low SES	High SES
Mobility	0.194 (0.185)	0.0770 (0.243)	0.318 (0.315)	0.0940 (0.0679)	0.152 (0.119)	0.0607 (0.0715)
Female	0.514*** (0.0632)	0.471*** (0.0873)	0.557*** (0.0896)	-0.0392 (0.0259)	-0.0355 (0.0425)	-0.0419 (0.0288)
No “A” Mark	-0.323** (0.137)	-0.387* (0.225)	-0.210 (0.199)	-0.0174 (0.0485)	-0.0627 (0.0694)	-0.00464 (0.0646)
Less than 3 A-levels	-0.243* (0.139)	0.00309 (0.181)	-0.557** (0.223)	-0.127** (0.0599)	-0.0845 (0.0732)	-0.207** (0.0811)
Ability measure missing	-0.227 (0.153)	-0.0563 (0.252)	-0.448** (0.218)	0.0879 (0.0688)	-0.00155 (0.0918)	0.144* (0.0867)
Low Socio Economic Status	-0.174*** (0.0625)			-0.0773*** (0.0245)		
Enrolled in further study directly after graduation	-0.363*** (0.0854)	-0.295** (0.131)	-0.405*** (0.117)	0.735*** (0.0385)	0.775*** (0.0550)	0.710*** (0.0449)
25-29 years old	-0.464*** (0.148)	-0.614*** (0.175)	-0.172 (0.276)	0.231*** (0.0685)	0.261*** (0.0817)	0.176 (0.116)
23-24 years old	-0.331*** (0.0891)	-0.296** (0.122)	-0.367*** (0.126)	0.120*** (0.0419)	0.108** (0.0529)	0.137** (0.0595)
Age 30 or more	-0.673*** (0.121)	-0.778*** (0.146)	-0.506** (0.206)	0.380*** (0.0729)	0.357*** (0.0907)	0.426*** (0.0940)
Constant	6.116*** (0.395)	18.78*** (1.391)	5.392*** (0.500)	5.391*** (0.327)	4.571*** (0.537)	7.419*** (0.345)
Observations	60,593	26,244	33,511	58,940	25,620	33,293
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
University Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Probability of being employed for the Italian first degree and postgraduates, 1 year after graduation. Logistic regression results.

	First degree graduates			Postgraduates		
	Full sample	Low SES	High SES	Full sample	Low SES	High SES
Mobility	-0.002 (0.06)	-0.042 (0.10)	0.010 (0.08)	0.093** (0.04)	0.194*** (0.06)	0.031 (0.05)
Female	-0.192*** (0.04)	-0.275*** (0.05)	-0.101* (0.06)	-0.057** (0.03)	-0.132*** (0.05)	-0.003 (0.04)
Low Socio Economic Status	0.045 (0.03)			0.027 (0.03)		
Grade at HS leaving exam	0.005*** (0.00)	0.005*** (0.00)	0.005** (0.00)	0.007*** (0.00)	0.007*** (0.00)	0.006*** (0.00)
Italian Citizenship	0.495*** (0.11)	0.652*** (0.22)	0.387*** (0.13)	0.448* (0.27)	-0.341 (0.54)	0.762** (0.32)
23-24 years old	-1.308*** (0.10)	-1.349*** (0.11)	-1.114*** (0.12)	-1.749 (1.28)	0.000 (.)	-1.549 (1.30)
23-24 years old	-1.352*** (0.10)	-1.397*** (0.11)	-1.142*** (0.11)	-0.692*** (0.10)	-0.764*** (0.12)	-0.466*** (0.12)
25-29 years old	-1.250*** (0.10)	-1.251*** (0.12)	-1.094*** (0.10)	-0.784*** (0.09)	-0.886*** (0.11)	-0.539*** (0.10)
Observations	31362	18174	13157	23165	10372	12788
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
University Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Probability of being employed for the Italian first degree and postgraduates, 3 years after graduation. Logistic regression results.

	First degree graduates			Postgraduates		
	Full sample	Low SES	High SES	Full sample	Low SES	High SES
Mobility	0.128* (0.07)	0.170 (0.11)	0.105 (0.10)	0.387*** (0.07)	0.305** (0.13)	0.425*** (0.10)
Other studies	-0.467*** (0.05)	-0.421*** (0.07)	-0.554*** (0.07)	-0.343*** (0.06)	-0.128 (0.09)	-0.563*** (0.06)
Female	-0.288*** (0.04)	-0.404*** (0.07)	-0.178*** (0.05)	-0.365*** (0.06)	-0.579*** (0.10)	-0.195*** (0.06)
Low Socio Economic Status	-0.042 (0.04)	0.000	0.000	-0.101** (0.05)	0.000	0.000
Grade at High school leaving exam	0.007*** (0.00)	0.006*** (0.00)	0.007*** (0.00)	0.014*** (0.00)	0.012*** (0.00)	0.013*** (0.00)
Italian Citizenship	0.267 (0.17)	0.377 (0.34)	0.153 (0.21)	1.063*** (0.32)	1.410*** (0.48)	0.783** (0.40)
22 years old or less	-1.171*** (0.12)	-1.319*** (0.13)	-0.790*** (0.16)	0.000 (.)	0.000 (.)	0.000 (.)
23-24 years old	-1.270*** (0.12)	-1.352*** (0.13)	-0.937*** (0.15)	-0.536*** (0.13)	-0.759*** (0.18)	-0.215 (0.18)
25-29 years old	-1.153*** (0.11)	-1.223*** (0.13)	-0.846*** (0.13)	-0.662*** (0.13)	-0.777*** (0.14)	-0.410** (0.17)
Observations	45926	24510	21294	30155	13613	16358
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Subject Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
University Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Note: standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Probability for Italian first degree graduates to pursue postgraduate studies, 1 year after graduation. Logistic regression results.

	Full sample	Low SES	High SES
Mobility	0.475*** (0.05)	0.548*** (0.07)	0.411*** (0.06)
Female	-0.147*** (0.03)	-0.170*** (0.03)	-0.120*** (0.04)
Low Socio Economic Status	-0.389*** (0.02)		
Grade at HS leaving exam	0.011*** (0.00)	0.009*** (0.00)	0.013*** (0.00)
Italian Citizenship	-0.050 (0.09)	0.256 (0.19)	-0.167 (0.11)
22 years old or less	1.985*** (0.10)	1.781*** (0.11)	2.414*** (0.12)
23-24 years old	1.099*** (0.09)	0.953*** (0.09)	1.467*** (0.11)
25-29 years old	0.117 (0.08)	0.049 (0.09)	0.398*** (0.11)
Observations	55978	28724	27251
Year Fixed Effects	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes
Subject Fixed Effects	Yes	Yes	Yes
University Fixed Effects	Yes	Yes	Yes

Note: standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.