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Giorgio Di Pietro

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Giorgio Di Pietro
Westminster Business School
and IZA

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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ABSTRACT

Do Study Abroad Programs Enhance the Employability of Graduates?*

Despite the great popularity of international educational mobility schemes, relatively little research has been conducted to explore their benefits. Using data on a large sample of recent Italian graduates, this paper investigates the extent to which participation in study abroad programs during university studies impacts subsequent employment likelihood. To address the problem of endogeneity related to participation in study abroad programs, we use university-department fixed effects and instrumental variable estimation where the instrumental variable is exposure to international student exchange schemes. Our estimates show that studying abroad has a relatively large and statistically meaningful effect on the probability of being in employment 3 years after graduation. This effect is mainly driven by the impact that study abroad programs have on the employment prospects of graduates from disadvantaged backgrounds.

JEL Classification: I2, J6

Keywords: study abroad programs, graduates, employment, instrumental variable

Corresponding author:

Giorgio Di Pietro
University of Westminster
Westminster Business School
Department of Economics and Quantitative Methods
35 Marylebone Road
NW1 5LS London
United Kingdom
E-mail: G.D.I.Pietro@westminster.ac.uk

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1. Introduction

Over the past decades, in Europe an increasing number of students have spent some time abroad during their university studies. Many students have been able to study abroad thanks to the ERASMUS program financed by the European Commission (EC). Since its start in 1987, this program, which mainly facilitates intra-European student mobility[1], has seen the participation of more than 2.2 million individuals[2]. However, the ERASMUS program is not the only channel through which students may temporarily study in another country. Many European higher education institutions have student exchange agreements with a number of universities outside Europe, especially in the US, Canada, China and Japan.

Not only are study abroad programs already well widespread, but their popularity is expected to further increase over the next years. On 23th November 2011 the EC proposed a new program called "ERASMUS for all" that would significantly increase the funds allocated to international student exchange programs. "ERASMUS for all" is expected to start in 2014 and will allow about 3 million students to study abroad during a 6 year period.

The rationale for strongly promoting study abroad programs is that they are likely to bring numerous positive outcomes at student-level and at the level of society as a whole. Among the expected benefits for student participants are: academic achievement, greater cultural appreciation, personal development and well-developed international perspective (Carley et al., 2011). At macro-level, education is recognised to have a crucial impact on innovation,

[1] In 2003, the ERASMUS MUNDUS, which is an extension of the ERASMUS program, was created. This is devoted to the promotion of student exchanges between European universities and counterparts around the world.

[2] http://ec.europa.eu/education/erasmus/doc/stat/table1.pdf

productivity and growth. In this sense, for instance, the “ERASMUS for all” proposal reflects the priorities of “Europe 2020”, the European Union's reform strategy for jobs and growth.

Despite many convincing arguments about the importance of study abroad programs, there is still, however, limited evidence about students’ gains from their international educational experience. This paper attempts to partially address this gap by considering whether these programs play a role in preparing individuals for the labour market. Specifically, we investigate whether in Italy students’ participation in international exchange programs during university studies affects their employment status 3 years after graduation.

Several theoretical explanations suggest that studying abroad is likely to improve subsequent employment prospects. Students may acquire or improve a number of skills that are highly valued in the workplace as a result of a study abroad experience. While foreign language skills are often considered to be the most visible benefit stemming from this experience, there are many other advantages. To start with, exposure to foreign cultures increases tolerance and cultural sensitivity, both of which are very important given today’s diverse workforce. Employers are constantly looking for applicants who are able to communicate and interact with individuals of different countries and cultures. Doorbar (2003), using data from a survey of human resource managers and directors, shows that employers consider candidates who studied abroad to have strong interpersonal skills. Additionally, international mobile students are likely to be open to change and flexible, allowing them to rapidly adapt to new situations. Finally, study abroad programs make students more confident, and this in turn helps them to perform better at job interviews. This is also demonstrated by the fact that students often talk about their international experience to show to employers how this has helped them to develop problem-solving skills (Matherly, 2005).

Not only are there relatively few papers on the relationship between participation in study abroad programs during university studies and subsequent employment outcomes, but the existing evidence is manly anecdotal or qualitative. Hence these papers do not account for the possibility that participation in study abroad programs can be the result of decisions taken by students that may be correlated with their subsequent labour market outcomes. For instance, students may choose to attend prestigious universities offering more possibilities to study abroad as well as higher employment prospects after graduation. The choice of the subject studied at university is another element that may simultaneously influence the probability of temporarily studying in another country and the labour market status following graduation. Also, students with higher aspirations and motivation are more likely to participate in study abroad programs and such students are also more likely to be successful in the labour market once they graduated. As a consequence, naïve estimates of the effect of study abroad program participation may be biased because of the endogeneity of participation in international student exchange schemes. In an attempt to address this issue, we estimate a university-department fixed effects instrumental variable (UDFEs-IV) model. We use differential exposure to study abroad programs across departments and universities to instrument participation in international student exchange schemes. Our IV approach is similar to that adopted by Parey and Waldinger (2011) who use data on a large sample of recent German graduates to look at the effect of studying abroad on the probability of working abroad following graduation. However, whilst they focus on the effect exclusively triggered by the ERASMUS program, we examine the impact of all study abroad programs. We argue that our instrument does not directly affect labour market outcomes of graduates and demonstrate that it helps to predict participation in study abroad programs.

This is the first study, to our knowledge, to attempt to identify the causal effect of participation in study abroad programs on subsequent employment likelihood. Our findings

highlight the importance of dealing with selection problems in estimating the effect of study abroad program participation. To preview the empirical results, this study finds a quantitatively small, statistically insignificant, positive effect of studying abroad on subsequent employment likelihood when using an ordinary-least-squares (OLS) or fixed effects model. However, once study abroad program participation is instrumented with exposure to international student exchange schemes, the corresponding effect becomes larger and statistically significant. This effect is mainly driven by the significant impact that study abroad programs have on the employment prospects of graduates from disadvantaged backgrounds.

The remainder of the paper is as follows. Section 2 briefly reviews those studies examining the relationship between participation in study abroad programs and subsequent employment outcomes. Section 3 describes the data and the methodology employed to identify the causal impact of studying abroad on employment likelihood. Section 4 presents the empirical results. Section 5 concludes.

2. Previous studies

As outlined above, there is limited evidence about the effect of participation in study abroad programs during university studies on subsequent employment outcomes. Additionally, this evidence comes from anecdotal or qualitative studies that are unable to separate the effect of study abroad program participation from the effect of other factors related to it. These studies generally support the hypothesis that an international educational experience improves graduates' job prospects, though they provide mixed results about the magnitude of this effect.

Several studies use data from surveys of former participants in study abroad programs to investigate how these individuals perceive the role of international experience in affecting their post-university outcomes. For instance, employing data from a US Business School,

Orahood et al. (2004) find that 96% of those students who participated in a study abroad program thought that their international experience made a difference in their career plan. The reported impact varied from 14% saying that studying abroad made a minor difference, 27% indicating that it made a moderate difference, 35% reporting that the difference was notable and to 15% suggesting a significant difference. A similar exercise was carried out by Teichler and Janson, (2007) who examine data from a 2005 survey addressed to students who studied abroad in the academic year 2000-2001 through the ERASMUS program. They find that 54% of them believe that their study abroad experience helped them to secure their first job[3].

Other studies are based on information collected by mobility managers of universities. King et al. (2010) interviewed several mobility managers of UK universities and conclude that participation in study abroad programs strongly enhances employability. One interviewee relied on data from a survey of year-abroad alumni where 87% of the respondents report that their experience abroad contributed to make their job interview more successful. Furthermore, 75% of the respondents indicate that their current employer would be more likely to offer a job to someone who studied abroad. Another interviewee had a meeting with a chief executive from Loyds TSB who argued that their company actively seeks international mobile students.

Some researchers make general statements about the important role that studying abroad plays in shaping labour market outcomes. Varghese (2008) concludes that study abroad programs are prestigious as they can be used to enhance one's academic credentials, to obtain

[3] Though this figure is relatively high, it is lower than corresponding figures obtained from comparable surveys carried out in 1993 and 1999 on former ERASMUS students in the academic years 1988-1989 and 1994-1995, respectively.

high-paid jobs and to enter into influential professional networks. Varghese also argues that the employment-related advantages associated with studying abroad are higher in developing countries than in the developed ones.

Finally, there are also studies investigating the extent to which employers are attracted by applicants who participated in study abroad programs. Using data from a small survey of over twenty large companies, Fielden et al. (2007) find that 60% of employers consider that an international mobility experience makes recent graduates more employable. The rest indicate that they recruit on the basis of individuals' strength. However, the majority of employers agree that studying abroad makes an individual well-rounded in terms of skills, experience and personal development. Bracht et al. (2006) analyse data from a questionnaire sent to employers of former ERASMUS students to inquire about their professional competences. The results are quite positive since more than 40% of these employers report that internationally mobile graduates are likely to take over professional assignments with high professional responsibility.

3. Data and Methodology

Our primary data source is a nationally representative survey conducted by ISTAT (Italian National Statistical Institute) in 2007 on individuals who graduated from Italian universities in 2004 (*Inserimento professionale dei laureati- Indagine 2007*). This survey includes graduates who completed a three-year first degree course as well as those who obtained a second-cycle university qualification[4]. It provides details on previous university studies (including participation in international exchange programs), employment status, parents' socio-economic characteristics, as well as a variety of personal attributes.

[4] Following the Bologna Declaration, in 2001 the Italian university system adopted a '3+2' model consisting of a First Level Degree (*Laurea di primo livello*) that lasts three years, followed by a Second Level Degree (*Laurea specialistica*) of two years length.

Given the cross-sectional nature of the survey, the following baseline specification can be used to investigate the effect of studying abroad on employment likelihood:

$$E_{ijk} = \beta_o + \beta_1 studyabroad_{ijk} + \beta_2' X_{ijk} + \mu_{ijk} \quad (1)$$

where E_{ijk} takes on the value 1 if individual i who studied at department j of university k has a job 3 years after graduation, and 0 otherwise; *studyabroad* is also a binary variable indicating whether the graduate participated in international exchange programs during his/her university studies; X is a vector of individual traits that are thought to influence employment likelihood[5]; μ is the error term.

β_1 is the coefficient of primary interest in this study as it measures the effect of participation in study abroad programs on the probability of being in employment 3 years after graduation. In order for OLS to provide an unbiased estimate of β_1 , participation in study abroad programs must be uncorrelated with unobserved individual, departmental and university characteristics included in the error term. However, several arguments suggest that this assumption is likely to be violated. For example, it is possible that students at a given department are more likely to participate in international exchange schemes and there might also be a labour market advantage or disadvantage associated with studying fields related to this department. Similarly, omitted university characteristics such as institutional reputation may affect students' probability of studying abroad as well as their employment status after graduation. To account for time-invariant confounding department/university effects that are likely to bias our estimates, we can estimate the following university-department fixed effects (UDFEs) model:

$$E_{ijk} = \gamma_o + \gamma_1 studyabroad_{ijk} + \gamma_2' X_{ijk} + \gamma_3 U_k + \gamma_4 D_j + \varepsilon_{ijk} \quad (2)$$

[5] We have used the same or similar control variables as Parey and Waldinger (2011)

where U and D are university and department fixed effects, respectively.

Nevertheless, the inclusion of these fixed effects still does not ensure that the estimate of γ_1 is unbiased. The student's decision to spend some time abroad may indicate something about his/her preferences and skills. If such a choice is related to unobserved characteristics like personal drive, determination, inclinations, etc., then the sample of study abroad participants is not a random sample of all students. This might lead to a spurious correlation between participation in study abroad programs during university studies and subsequent employment outcomes. One way of addressing this source of endogeneity is to identify an instrumental variable Z, i.e. a variable that is correlated with the endogeneous variable *studyabroad* but is unrelated to the error term ε [6] .With such an instrument Z, we can estimate the UDFEs-IV model using the following two-stage least squares (2SLS) approach:

$$studyabroad_{ijk} = \alpha_o + \alpha_1 Z_{ijk} + \alpha_2^{'} X_{ijk} + \alpha_3 U_k + \alpha_4 D_j + \eta_{ijk} \quad (3)$$

$$E_{ijk} = \delta_o + \delta_1 studyabroad_{ijk} + \delta_2^{'} X_{ijk} + \delta_3 U_k + \delta_4 D_j + \upsilon_{ijk} \quad (4)$$

Following Parey and Waldinger (2011), we use students' exposure to international exchange programs as our instrument. As indicated above, a good instrument needs to satisfy two conditions. First, it should be highly correlated with the endogenous variable. Otherwise, one is faced with the problem of weak instrument, which would bias our 2SLS estimates towards OLS estimates. We expect our instrument to strongly predict *studyabroad* . It captures an important dimension of the supply-side of international mobility schemes since it is an indicator of the number of places that are potentially available at foreign universities for those

[6] The first criterion refers to the strength of the instrument, whereas the second one is related to the validity of the instrument.

students in Italy who are willing to spend a study period abroad[7]. In labour economics, the use of supply-side measures as instruments in the 2SLS procedure is widely established, especially among those papers investigating the causal impact of education on labour market outcomes (Card, 2001). Second, the standard exclusion restriction must hold: the instrument should not be correlated with the error term of the employment equation. That is, the instrument should not have an independent effect on E ; it should – conditional on covariates– only impact E via *studyabroad* . Also this condition appears to be met as our instrument provides variation in students 'participation in study abroad programs that seems to be plausibly exogenous to the subsequent employment outcomes of graduates.

Data on the instrument are taken from another nationally representative ISTAT survey carried out in 2004 on individuals who successfully completed high school in 2001 (*Percorsi di studio e di lavoro diplomati- Indagine 2004*). Given that one of the possible destinations of high school leavers is university enrolment, this survey allows us to collect information on participation in international exchange programs experienced by a large sample of university students in the 2001-2004 period. Specifically, our instrument is a continuous measure[8]

[7] Students wishing to participate in study abroad programs typically apply about one year before they intend to study abroad. Given that very often the number of applications exceed the number of places available, the department is responsible for making selection decisions. The criteria for this selection are mainly based on academic achievement and motivation. A mobility grant is typically given to study abroad winners.

[8] Following Parey and Waldinger (2011), we also construct a binary instrument taking on the value 1 if there was at least one student within a given department and at a given university who studied abroad between 2001 and 2004, and 0 otherwise. However, this instrument turns out to be quite weak. This may reflect the fact that dummy variables may not have enough variation to constitute good instruments and hence continuous variables are typically preferred (Heckman, 1990).

representing the proportion of students within a given department and at a given university who participated in international exchange programs between 2001 and 2004[9].

In line with the approach used by Parey and Waldinger (2011), even though the dependent variables of Equations (3) and (4) are both dichotomous, we use linear models for every step of our estimation procedure. Heckman and MaCurdy (1985) argue that, in case of simultaneous linear probability models, the 2SLS approach would still deliver consistent coefficient estimates and hence this is a valid technique. Similarly, Angrist (2006) observes that linear 2SLS estimates have a causal interpretation regardless of the possible non-linearity induced by dichotomous dependent variables. Additionally, the consistency of the 2SLS estimates is insensitive to whether or not the first stage conditional expectation function is linear (see Angrist, 2001).

Although our measure of labour market outcome is rather crude given its binary nature, it has great policy relevance in Italy where a significant proportion of young people are unable to secure a job following graduation. For instance, according to Eurostat, in 2007 (the year of our survey) in Italy the unemployment rate among people aged between 20 and 34 who possess either a first-level or a second-level university degree was 12.8%, whereas the corresponding average figure for Europe was 5.9%. Hence there is a strong need to identify those programs/courses/activities offered by universities that make graduates more employable.

[9] Although the 2007 survey includes also graduates that began their university studies earlier than 2001, our instrument is still a good measure of student's exposure to international exchange programs. Study abroad agreements are usually longer-term contracts covering several years. Hence the number of exchange places with a given foreign university remains constant for several years.

Our explanatory variable of interest is a dichotomous variable taking on the value 1 if the graduate participated in a study abroad program during his/her university studies, and 0 otherwise. Unfortunately, the survey does not provide any indication about the length of the study abroad period[10]. Our data are quite rich in the quality of information they give on the personal and academic characteristics of graduates. We have information on gender, age, nationality, area of residence[11], marital status, children, family background (proxied by parental education), type of degree (first-level or second-level), final degree classification, work experience during university, department and university attended[12]. The inclusion of dummies for area of residence is very important as it enables us to control for variability in labour market conditions.

Our dataset is first reduced by removing those individuals who attended universities producing less than 750 graduates each year given that the 2007 survey does not allow us to identify the institution they graduated from. Our sample is further reduced by excluding those respondents who completed a three-year first degree in 2004, but were still enrolled on a second-level degree course at the time of the interview. Given that in Italy the only mode of enrolment is full-time, we expect the majority of these individuals to have not yet entered the labour market. Finally, following the approach of Higher Education Funding Council for England (HEFCE) that has conducted various studies on the performance of the higher education sector in the UK, we drop from the sample graduates who do not have a job, are not studying, and are not seeking employment. Observations with missing values for any of the variables are dropped with the exception of age. Given the relatively large number of

[10] Similarly, no information is given about the type of study abroad program chosen by the individual.

[11] 21 regions (20 Italian regions plus another category that includes graduates currently living abroad) are considered.

[12] 11 departments, 65 universities are considered.

respondents with missing information on age, an indicator for unreported age is included as an additional explanatory variable in our equations.

The above exclusions leave us with a sample of 33,015 graduates. Table 1 provides summary statistics for the variables used in the analysis. Male graduates, graduates with higher educated parents, graduates who completed a High School Academic Track (*liceo*), graduates who have performed better at university are all more likely to have participated in study abroad programs. Our instrument is also strongly correlated with participation in international student exchange programs.

Insert Table 1 about here

4. Results

Table 2[13] presents estimates of the effect of participation in study abroad programs on graduates' probability of being in employment 3 years following graduation. Column (1) reports estimates from a simple OLS model (i.e. Eq (1)) that comprises all control variables, but does not include university and department fixed effects. The relevant coefficient is small and statistically insignificant, suggesting that studying abroad has a negligible influence on employment prospects. In Column (2), we add university and department fixed effects to our specification. Estimates from the UDFEs-OLS model show that the coefficient on study abroad program participation continues to be small and is still statistically indistinguishable from zero[14]. All the fixed effects are found to be statistically highly significant[15].

[13] Following Parey and Waldinger (2011), all regressions report standard errors that are clustered at university level.

[14] It is interesting to note that if department and university fixed effects are separately included in the simple OLS regression, they have an opposite effect on the size of the coefficient on study abroad program participation. While the magnitude of the relevant coefficient slightly increases (i.e. 0.009) once department

Insert Table 2 about here

As argued above, however, our fixed effect regression framework does not address all concerns of omitted variable bias. Therefore, in an attempt to tackle concerns about any remaining bias, Column (3) of Table 2 presents estimates from the UDFEs-IV model. First-stage results indicate that our instrument is strongly correlated with the probability of studying abroad. The value of the F-statistic suggests that there is no weak instrument problem. A rule of thumb put forward by Bound *et al.* (1995) and Staiger and Stock (1999) is that the F-statistic should be larger than 10, or at least larger than 5. The UDFEs-IV point estimate of the effect of study abroad program participation on employment likelihood is positive and statistically significant at the 5 percent level. The magnitude of the effect is considerably larger than that associated with our previous estimates. Employment probability is increased by about 23.7 percentage points as a result of a study abroad experience.

To check the robustness of our combined fixed effects instrumental variable estimates reported in Table 2, we carry out some sensitivity tests. First, we exclude work experience during university from our covariates. Students may be more likely to work as a result of their participation in study abroad programs. For instance, several international exchange students report having worked while abroad to cover part of their living expenses. Additionally, it is also possible that a study abroad experience helped students to obtain a job

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fixed effects are included, the addition of university fixed effects makes its value smaller (i.e. 0.002). This suggests that while unobserved university characteristics affecting the probability of studying abroad are positively correlated with post-university employment outcomes, the opposite occurs with the corresponding unmeasured department factors.

[15] If we estimate these regressions using a logit regression, the marginal effects associated with study abroad program participation remain largely unchanged. Specifically, in Columns (1) and (2) of Table 2 they change to 0.003 (0.006) and 0.005 (0.005), respectively.

before completing university. Therefore, the inclusion of work experience during university may attenuate the effect of study abroad program participation on employment likelihood of graduates. However, as shown in Column (1) of Table 3, this exclusion does not significantly affect our results. The size of the relevant coefficient and its standard errors are practically unchanged.

Second, one concern with the 2SLS strategy used here is that our instrument may be directly related to the probability of being in employment following graduation. Universities/departments with greater exposure to international student exchange schemes may be located in areas offering higher employment opportunities. To address this concern, we include dummies for areas of university location in our model. UDFEs-IV estimates reported in Column (2) of Table 3 indicate that the instrument's strength did not significantly change as a consequence of the added control variables. Additionally, the magnitude of the effect related to study abroad program participation continues to be large.

Third, in an attempt to better control for the effect of local labour market conditions, we drop graduates living abroad from our sample and include regional unemployment rate by gender[16] in the specification. The results presented in Column (3) of Table 3 show that our estimate of the effect of study abroad program participation is largely insensitive to these changes. In line with our expectations, the coefficient on unemployment rate is negative and statistically significant.

Insert Table 3 about here

The substantial increase in the relevant IV point estimate compared to the OLS results may indicate that there are heterogeneous effects of study abroad program participation. It is possible that our IV estimates are driven by the effect associated with a particular group of

[16] Average regional unemployment rate during the 2004-2007 period is used.

the student population whose behaviour is strongly affected by the instrument. This is known in the literature as the "local average treatment effect" (LATE) (see Angrist and Imbens, 1994; Angrist et al., 1996). Angrist and Imbens (1994) show that 2SLS estimates capture the effect of "treatment" on the population whose treatment status is influenced by the instrument; they refer to this group as "compliers". Given the definition of our instrument, this group would be composed by students who would not have studied abroad without study abroad programs but do so as these are implemented. In an attempt to investigate this issue, we split our sample into three subgroups according to parents' highest educational attainment: 1) graduates from very disadvantaged backgrounds, i.e. those whose both parents have only completed primary education or not even that, 2) graduates from disadvantaged backgrounds, i.e. those whose at least one of their parents has a secondary school or a high school diploma, 3) graduates from advantaged backgrounds, i.e. those who have one or both parents with a university degree. Table 4 presents UDFEs-IV estimates of the effect of study abroad program participation on subsequent employment likelihood separately for these subgroups.

Insert Table 4 about here

As observed by Antman (2011), the instrument's strength tends to diminish when the sample is decomposed into subgroups. However, the value of the F statistic drops especially in the estimates related to graduates from advantaged backgrounds and those from very disadvantaged backgrounds. This result suggests that, while study abroad programs significantly affect the likelihood of studying abroad for individuals from disadvantaged backgrounds, this holds to a less extent for those from other backgrounds. Given that all participants in international exchange programs typically receive a scholarship covering travel expenses and the cost of living in the foreign country, one would have expected that individuals from both very disadvantaged and disadvantaged backgrounds would be considerably more likely to study abroad thanks to study abroad programs. Nevertheless, it is

possible that, due to the low cultural environment found in the family of origin, many students from very disadvantaged backgrounds are not attracted by an international educational experience even if study abroad programs reduce the cost of it. They may not fully value the potential benefits associated with studying abroad.

Looking at how the employment premium associated with studying abroad varies across the subgroups, one can observe that the relevant coefficient is small, negative and statistically insignificant for graduates from very disadvantaged backgrounds. Again a possible explanation for this is that those graduates from very disadvantaged backgrounds who decide to study abroad may not have a sufficient cultural preparation that enables them to fully take advantage of the employment-related benefits of an international educational experience. On the other hand, the size of the relevant coefficient for graduates from other backgrounds is slightly higher than that presented in Column (3) of Table 2. However, while this coefficient is statistically significant at the 5 percent level for graduates from disadvantaged backgrounds, it is statistically indistinguishable from zero for those from advantaged backgrounds.

In summary, the estimates of Table 4 provide some support for the LATE interpretation of our IV approach. The IV estimates for the whole graduate population seems to be driven by effect that study abroad programs have on individuals from disadvantaged backgrounds. These individuals make up a large fraction of our sample, their probability of studying abroad is strongly influenced by our instrument and they appear to benefit a lot from participating in study abroad programs in terms of employment prospects. An study abroad experience may help these individuals to develop several important employment-related skills (e.g. intercultural competence, global awareness, foreign language skills) to which they may have been less exposed given their family background.

5. Conclusions

Over the past decades, in Europe a growing number of students have spent some time abroad during their university studies. However, despite the great popularity of international educational mobility schemes, relatively little research has been conducted to explore their benefits. Since it is often claimed that these schemes may help individuals to prepare for the labour market, this paper uses data on a large sample of Italian graduates to investigate the extent to which students' participation in study abroad programs impacts their subsequent employment likelihood. OLS fixed effects and IV fixed effects regression techniques are used in an attempt to correct the endogeneity problem.

The estimated effect of study abroad program participation using our IV strategy is found to be considerably larger than that related to regression strategies that do not fully control for the endogeneity of international student exchange schemes. Our UDFEs-IV estimates indicate that graduates who studied abroad during university are about 24 percentage points more likely to be in employment 3 years following graduation relative to their non-mobile peers. This estimate for the whole graduate population is, however, driven by the significant effect that study abroad programs have on the employment prospects of individuals from disadvantaged (but not very disadvantaged) backgrounds. This result is consistent with the idea that an international educational experience may provide these individuals with a great opportunity to develop marketable skills (e.g. intercultural competence, global awareness, foreign language skills) to which they may have been less exposed given their family background.

Our results are of particular policy relevance as they would seem to provide some support for the EC's plan to significantly expand the ERASMUS program over the next years. This plan, named "ERASMUS for all", would give the possibility to study abroad to a larger number of students and we expect a considerable proportion of future study abroad participants to come

from disadvantaged backgrounds. Currently many students from disadvantaged backgrounds are left out from the list of study abroad winners as the criteria for the award of an ERASMUS scholarship (e.g. academic achievement, motivation letter) tend to favour their peers from advantaged backgrounds.

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Table 1
Descriptive statistics

	Participated in international exchange programs =1		Participated in international exchange programs =0	
	Mean	Std. Dev	Mean	Std. Dev
Employed	0.877	0.328	0.874	0.332
Male	0.503	0.500	0.472	0.499
Married	0.196	0.397	0.296	0.457
Italian	0.978	0.145	0.987	0.114
Children	0.036	0.187	0.139	0.346
High school academic track (*liceo*)	0.765	0.424	0.578	0.494
Final university grade	104.580	6.564	102.641	7.429
Second-level university degree	0.748	0.435	0.586	0.493
Age (omitted is 30 years or more)	0.038	0.190	0.167	0.373
-24 years or less	0.288	0.453	0.229	0.420
-25-29 years	0.436	0.496	0.361	0.480
-Unknown	0.238	0.426	0.243	0.429
Work experience during university studies (omitted is no employment)	0.256	0.437	0.318	0.466
-Permanent employment	0.116	0.320	0.228	0.420
-Occasional /seasonal employment	0.628	0.484	0.453	0.498
Mother's education (omitted is university education)	0.273	0.445	0.146	0.353
-Primary education or less	0.086	0.280	0.193	0.395
-Lower secondary education	0.224	0.417	0.292	0.455
-Upper secondary education	0.417	0.493	0.369	0.482
Father's education (omitted is university education)	0.322	0.467	0.186	0.389
-Primary education or less	0.084	0.277	0.156	0.363
-Lower secondary education	0.194	0.395	0.287	0.452
-Upper secondary education	0.400	0.490	0.371	0.483
Exposure to international exchange programs	0.072	0.104	0.029	0.062
Observations	2,313		30,702	

Table 2
Estimates of the effect of studying abroad on employment likelihood

Estimation method Model	OLS (1)	OLS UDFEs (2)	2SLS UDFEs-IV (3)
Constant	0.724*** (0.052)	0.738*** (0.051)	0.787*** (0.049)
Participation in international exchange programs	0.005 (0.008)	0.008 (0.008)	0.237** (0.120)
Controls	Yes	Yes	Yes
Department FE	No	Yes	Yes
University FE	No	Yes	Yes
Joint significance Department FEs (p-value)		38.10 (0.000)	388.58 (0.000)
Joint significance University FEs (p-value)		49262.68 (0.000)	2900000 (0.000)
First-stage F test of excluded instruments p-value			 43.23 (0.000)
Observations	33,015	33,015	33,015

Standard errors are clustered at university level. Controls include age, gender, nationality, marital status, children, area of residence, mother's education, father's education, final university grade, work experience during university studies, high school academic track, type of university degree (first-level or second-level) and interactions between gender and marital status and between gender and children

***denotes significance at the 1 percent level
** denotes significance at the 5 percent level
*denotes significance at the 10 percent level

Table 3
Robustness tests
Estimates of the effect of studying abroad on employment likelihood- UDFEs-IV

	Elimination of work experience during university from the covariates (1)	Inclusion of area dummies for university location among the covariates (2)	Inclusion of regional unemployment rate among covariate and elimination of graduates living abroad (3)
Constant	0.881*** (0.048)	0.765*** (0.049)	0.827*** (0.053)
Participation in international exchange programs	0.240** (0.123)	0.241** (0.119)	0.228** (0.116)
Controls	Yes	Yes	Yes
Department FE	Yes	Yes	Yes
University FE	Yes	Yes	Yes
Joint significance Department FEs (p-value)	342.69 (0.000)	405.54 (0.000)	378.39 (0.000)
Joint significance University FEs (p-value)	2700000 (0.000)	3100000 (0.000)	1900000 (0.000)
Unemployment rate			-0.010*** (0.003)
First-stage F test of excluded instruments p-value	 43.08 (0.000)	 43.38 (0.000)	 48.62 (0.000)
Observations	33,015	33,015	32,361

Standard errors are clustered at university level. Controls include age, gender, nationality, marital status, children, area of residence, mother's education, father's education, final university grade, work experience during university studies, high school academic track, type of university degree (first-level or second-level) and interactions between gender and marital status and between gender and children.

***denotes significance at the 1 percent level
** denotes significance at the 5 percent level
*denotes significance at the 10 percent level

Table 4
Heterogeneous effects
Estimates of the effect of studying abroad on employment likelihood- UDFEs-IV

	Graduates from very disadvantaged backgrounds (1)	Graduates from disadvantaged backgrounds (2)	Graduates from advantaged backgrounds (3)
Constant	0.714*** (0.109)	0.837*** (0.054)	0.763*** (0.121)
Participation in international exchange programs	-0.062 (0.290)	0.266** (0.131)	0.252 (0.217)
Controls	Yes	Yes	Yes
Department FE	Yes	Yes	Yes
University FE	Yes	Yes	Yes
Joint significance Department FEs (p-value)	62.92 (0.000)	302.51 (0.000)	212.47 (0.000)
Joint significance University FEs (p-value)	230000 (0.000)	2600000 (0.000)	2100000 (0.000)
First-stage F test of excluded instruments p-value	 14.38 (0.000)	 38.43 (0.000)	 16.38 (0.000)
Observations	4,096	21,408	7,511

Standard errors are clustered at university level. Controls include age, gender, nationality, marital status, children, area of residence, mother's education, father's education, final university grade, work experience during university studies, high school academic track, type of university degree (first-level or second-level) and interactions between gender and marital status and between gender and children.

***denotes significance at the 1 percent level
** denotes significance at the 5 percent level
*denotes significance at the 10 percent level