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DO STUDY ABROAD PROGRAMS ENHANCE THE EMPLOYABILITY OF GRADUATES?

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Abstract

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, I use a combination of fixed effects and instrumental variable estimation where the instrumental variable is exposure to international student exchange schemes. My estimates show that studying abroad has a relatively large and statistically meaningful effect on the probability of being in employment three years after graduation. This effect is mainly driven by the impact that study abroad programs have on the employment prospects of graduates from disadvantaged (but not very disadvantaged) backgrounds, though positive but imprecise effects are also found for graduates from advantaged backgrounds.

1. INTRODUCTION

In Europe over the past decades, 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 European Region Action Scheme for the Mobility of University Students (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 about 3 million individuals.[2] The ERASMUS program is not the only channel through which students may temporarily study in another country, however. Many European higher education institutions have student exchange agreements with a number of universities outside Europe, especially in the United States, Canada, China, and Japan.

Not only are study abroad programs already widespread but their popularity is expected to further increase over the years. On 23 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 six-year period.

In this paper, I look at one of the important potential effects of study abroad program participation—namely, the effect that studying abroad has on subsequent employment likelihood. Specifically, I investigate whether in Italy students' participation in international exchange programs during university studies affects their employment status three years after graduation.

Several arguments suggest an international education experience plays an important role in preparing individuals for the labor market. Students may acquire or improve a number of skills that are highly valued in the workplace as a result of participation in study abroad programs. Although 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, internationally mobile students are likely to be flexible and open to change, allowing them to rapidly adapt to new situations. Finally, study abroad programs

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1. In 2003, ERASMUS MUNDUS, which translates to ERASMUS World in Latin, was created. This is an extension of the ERASMUS program and it is devoted to the promotion of student exchanges between European universities and counterparts around the world.
2. See http://europa.eu/rapid/press-release_MEMO-13-647_en.htm.

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 potential employers how this has helped them develop problem-solving skills (Matherly 2005).

In line with these considerations, several papers (see, e.g., Orahood, Kruze, and Pearson 2004; Fielden, Middlehurst, and Woodfield 2007; Teichler and Janson 2007; King, Findlay, and Ahrens 2010) provide support for the proposition that studying abroad improves employability of graduates. On the other hand, there are a few studies that either reach the opposite conclusion (Wiers-Jenssen 2008; Saarikallio-Torp and Wiers-Jenssen 2010) or find there is no effect (Cammelli 2001). A limitation of this literature is that the existing evidence is anecdotal or qualitative. Hence, these papers do not control for the potential endogeneity associated with studying abroad, perhaps given the practical difficulty in identifying exogenous variation to use for identification. In contrast to previous studies, in this paper I do attempt to separate the effect of study abroad program participation from the effects of other factors related to it.[3] Specifically, there may be university-, discipline-, and individual-confounding factors. Students may attend prestigious universities offering more possibilities to study abroad as well as giving them higher employment prospects after graduation. The discipline studied at university is another factor that may simultaneously influence the probability of temporarily studying in another country and the labor market status following graduation. Finally, study abroad program participants are not a random sample of all university students. It is very likely that participation in study abroad programs is associated with unobserved student characteristics that affect labor market outcomes after graduation. Therefore, in an attempt to address the endogeneity of participation in international student exchange schemes, I estimate a university and discipline fixed effects instrumental variable (UDFEs-IV) model. My IV approach is similar to that of Parey and Waldinger (2011) and Di Pietro (2012), as I use students' exposure to study abroad programs as an instrument. The idea is that students who are more exposed to study abroad programs are more likely to study abroad relative to their peers who are less exposed to these programs, everything else being equal. Although studying abroad is directly related to exposure to study abroad programs, there seems no reason to believe this exposure has its own independent effect on future employment prospects. In essence, I examine how employment likelihood differs between

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3. I am, however, aware of three studies (i.e., Oosterbeek and Webbink 2011; Parey and Waldinger 2011; Di Pietro 2012) that also address this endogeneity issue but investigate another effect of study abroad program participation, namely the effect studying abroad has on the graduate's probability of working in a foreign country.

graduates who studied abroad and those who did not because of the different intensity of study abroad programs they have been exposed to while at university.

My findings highlight the importance of dealing with selection problems in estimating the employment 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. Once study abroad program participation is instrumented with exposure to international student exchange schemes, however, 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 (but not very disadvantaged) backgrounds, though positive but imprecise effects are also found for graduates from advantaged backgrounds.

The remainder of the paper is as follows. Section 2 presents the data and the empirical framework used to identify the causal impact of studying abroad on subsequent employment likelihood. Section 3 reports and discusses the empirical results. Section 4 concludes.

2. DATA AND EMPIRICAL FRAMEWORK

The primary data source is a nationally representative survey conducted in 2007 by the Italian National Statistical Institute 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] The key feature of this data set is the observation of whether the graduate has participated in study abroad programs[5] during his/her university studies. Other details on previous university studies are also given. Specifically, there is information on the university attended (with the exception of those individuals who studied at universities producing fewer than 750 graduates each year), whether the university was public or private, the discipline studied,[6] month of graduation, final degree classification, work experience during university,

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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.
5. Unfortunately, the survey does not provide any indication about the length of the study abroad period. Similarly, no information is given about the type of study abroad program chosen by the individual.
6. Eleven disciplines and sixty-five universities are considered.

whether the graduate has regularly attended classes, and whether his/her enrollment in the university system extended beyond the legal length of the program (*fuori corso*). There is also information on the type of high school (academic or vocational) attended by the individual and his/her final high school grade. The survey also collects information on additional qualifications acquired by the graduate between 2004 and 2007, including a master's degree, a PhD degree, and whether he/she has passed the professional practice examination (*esame all'abilitazione*). Additionally, the data set is rich in terms of data about personal characteristics. These include gender, age, nationality, area of residence,[7] marital status, children, and parental education. Finally, information on employment status in 2007 is provided.

The original data set is first reduced by removing those individuals with missing information about the university from which they graduated. The sample is further reduced by excluding those respondents who are not employed and are not looking for work as they want to continue their studies.[8] I also exclude from the final sample those individuals who already had one or more degrees before completing the one in 2004. There is no information on whether these individuals have participated in study abroad programs during their other degree(s). Finally, following the approach of Higher Education Funding Council for England, which has conducted various studies on the performance of the higher education sector in the UK, I drop from the sample those graduates who do not have a job, are not studying, and are not seeking employment.[9] Observations with missing values for any of the variables of interest are dropped, with the exception of age. Given the relatively large number of respondents with missing information on age, an indicator for unreported age is created.

These exclusions leave a final sample of 32,119 graduates. Table 1 provides summary statistics for this sample.[10] In line with the findings obtained by similar studies (see, e.g., Di Pietro and Page 2008), I find that participating graduates systematically differ from nonparticipating graduates along several characteristics. For instance, graduates who participated in study abroad programs are more likely to have studied at a private university, more likely to have higher educated parents, more likely to have completed a high school academic track (*liceo*), and more likely to have performed well at university

7. Twenty-one regions (twenty Italian regions plus another category that includes graduates currently living abroad) are considered.
8. These are mainly respondents who completed a three-year first degree in 2004 and were still enrolled in a second-level degree course at the time of the interview.
9. The sensitivity of the results to the inclusion of this group of graduates is discussed in section 3.
10. Descriptive statistics for university attended, discipline studied, and area of residence are available upon request.

Table 1. Descriptive Statistics

	Participated in Study Abroad Programs = 1		Participated in Study Abroad Programs = 0	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**
Employed	0.872	0.335	0.861	0.346
Male	0.503	0.500	0.482	0.500
Married	0.193	0.395	0.265	0.442
Italian	0.978	0.146	0.987	0.114
Children	0.034	0.182	0.109	0.312
Age (omitted is 30 years or more)	0.035	0.184	0.128	0.334
24 years or less	0.308	0.462	0.255	0.436
25–29 years	0.422	0.494	0.364	0.481
Unknown	0.235	0.424	0.254	0.435
High school academic track	0.763	0.425	0.594	0.491
High school final grade	49.927	7.302	48.839	7.249
University attended was private	0.119	0.323	0.059	0.236
Second-level university degree	0.719	0.450	0.594	0.491
Final university grade	104.648	6.486	102.499	7.401
Regularly attended classes at university	0.856	0.352	0.820	0.384
Month of graduation (omitted is December)	0.099	0.299	0.112	0.315
January	0.014	0.119	0.014	0.117
February	0.058	0.234	0.056	0.229
March	0.162	0.368	0.144	0.351
April	0.101	0.302	0.099	0.298
May	0.036	0.187	0.033	0.177
June	0.048	0.215	0.041	0.198
July	0.215	0.411	0.187	0.390
August	0.000	0.021	0.000	0.019
September	0.041	0.198	0.040	0.196
October	0.122	0.327	0.127	0.333
November	0.104	0.305	0.149	0.356
Time taken to complete the degree (omitted is the legal length of the program)	0.482	0.500	0.487	0.500
One year beyond the legal length of the program	0.249	0.432	0.200	0.400
Two years beyond the legal length of the program	0.138	0.345	0.131	0.337
Three years beyond the legal length of the program	0.068	0.251	0.079	0.269
Four or more years beyond the legal length of the program	0.063	0.243	0.103	0.304

Table 1. Continued.

	Participated in Study Abroad Programs = 1		Participated in Study Abroad Programs = 0	
	Mean	Std. Dev.	Mean	Std. Dev.
Work experience during university studies (omitted is never worked)	0.256	0.436	0.333	0.471
Worked continuously	0.110	0.313	0.189	0.391
Worked occasionally	0.634	0.482	0.478	0.500
Master's degree	0.048	0.214	0.042	0.201
PhD degree	0.005	0.068	0.003	0.051
Passed the professional practice examination	0.288	0.453	0.348	0.476
Mother's education (omitted is university education)	0.275	0.447	0.152	0.359
Primary education or less	0.084	0.277	0.178	0.382
Lower secondary education	0.223	0.416	0.292	0.455
Upper secondary education	0.419	0.493	0.378	0.485
Father's education (omitted is university education)	0.324	0.468	0.192	0.394
Primary education or less	0.082	0.275	0.145	0.352
Lower secondary education	0.193	0.395	0.286	0.452
Upper secondary education	0.401	0.490	0.378	0.485
Exposure to study abroad programs	0.073	0.104	0.031	0.063
Observations	2,376		29,743	

relative to nonparticipants. In terms of employment likelihood, the raw means suggest there is no statistically significant difference between graduates who studied abroad and those who did not. The aim of this study is to determine whether this insignificant difference in employment status by study abroad program participation remains, once the effects of observable and unobservable characteristics have been accounted for.

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

$$E_{ijk} = \beta_o + \beta_1\, studyabroad_{ijk} + \beta_2'\, X_{ijk} + \mu_{ijk}, \tag{1}$$

where E_{ijk} takes on the value 1 if individual i who studied discipline j at university k has a job three years after graduation, and 0 otherwise; *studyabroad* is also a binary variable indicating whether the graduate has participated in

international exchange programs during his/her university studies; X is a vector of individual traits that are thought to influence employment likelihood; and μ is an 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 three years after graduation. In order for OLS to provide unbiased estimates of β_1, participation in study abroad programs must be uncorrelated with unobserved individual, discipline, and university characteristics included in the error term. Several arguments suggest this assumption is likely to be violated, however. For example, it is possible that individuals studying a given discipline are more likely to participate in international exchange schemes and that there might also be a labor market advantage or disadvantage associated with studying this discipline. 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 discipline and university effects that are likely to bias the estimates, the following UDFEs model can be estimated:

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

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

Nevertheless, the inclusion of these fixed effects still does not ensure that the estimates of γ_1 are unbiased. The decision to spend some time abroad during university studies may reflect student's preferences and personality traits that are correlated with future employment prospects. If students with higher aspirations and motivation are more likely to participate in study abroad programs and such unobserved characteristics make them more likely to be successful in the labor market once they graduated, there would be positive selection, and the OLS estimates of γ_1 would be biased upward. Alternatively, if study abroad program participants are likely to be weaker on unobserved dimensions that are related to labor market opportunities, there would be negative selection, and the OLS estimates of γ_1 would be biased downward. In an attempt to remove this selection bias, I exploit the exogenous variation in study abroad program participation that is due to differences in students' exposure to international exchange schemes across universities and disciplines. The following system of equations is estimated by two-stage least squares (2SLS):

$$studyabroad_{ijk} = \alpha_o + \alpha_1 Z_{ijk} + \alpha_2' X_{ijk} + \alpha_3 U_k + \alpha_4 D_j + \eta_{ijk}, \tag{3}$$

$$E_{ijk} = \delta_o + \delta_1 \, studyabroad_{ijk} + \delta_2' X_{ijk} + \delta_3 U_k + \delta_4 D_j + \upsilon_{ijk}, \tag{4}$$

where Z is the instrument—that is, students' exposure to international exchange programs across universities and disciplines.

Data on the instrument are taken from another nationally representative Italian National Statistical Institute 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 enrollment, this survey allows us to collect information on participation in international exchange programs experienced by a large sample of university students. In this survey, respondents were asked to indicate whether "during their university studies they have participated in 'official' international student mobility programs including ERASMUS and other student exchange agreements offered by the university." Using responses to this question, I constructed a continuous measure[11] representing the proportion of students studying a given discipline at a specific university who have participated in international exchange programs during their first three years of study.[12] I interpret this as a proxy for the number of places that are available at foreign universities for those students in Italy who are willing to spend a study period abroad. One concern with considering this as a measure for supply-side constraints[13] is that some places (e.g., the less popular ones) might not be filled up. Nevertheless, the available evidence suggests this is not the case as, for instance, the entire budget allocated to Italy under the ERASMUS program tends to be consumed (i.e., all the grants are utilized).[14] This is also due to the fact that Italian universities accept late ERASMUS applications for those places that have not been filled up in the first round or that have suddenly become available.

The key identifying assumptions of this IV approach are (1) the instrument is correlated with study abroad program participation and (2) 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

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11. Following Parey and Waldinger (2011), I also constructed a binary instrument taking on the value 1 if there was at least one student studying a given discipline at a specific university who studied abroad between 2001 and 2004, and 0 otherwise. This instrument turns out to be quite weak, however. 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).

12. Although the 2007 survey also includes graduates who began their university studies earlier than 2001, the instrument is still a good measure of students' 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.

13. In labor 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 labor market outcomes (Card 2001).

14. See statistics included in the documents available at www.programmallp.it/box_contenuto.php?id_cnt=1612&id_from=66&style=erasmus&pag=1.

have an independent effect on E; it should—conditional on covariates—only impact E via *studyabroad*. Whereas the first assumption is testable (first-stage results are presented and discussed in the next section), the validity of the second assumption is more difficult to assess, although the inclusion of university and discipline fixed effects plays an important role in ensuring this assumption is not violated. For instance, the instrument may be correlated with students' future employment prospects via its association with university quality. Specifically, this correlation is likely to be positive as students facing a greater exposure to study abroad programs may attend higher quality institutions whose graduates tend to have better employment prospects. Similarly, studying certain disciplines may make people more exposed to study abroad programs, and may also have an effect on their employment likelihood following graduation. Therefore, the omission of direct information on the university attended and the discipline studied by individuals may lead to an error in the employment equation that is correlated with the instrument. Additionally, the validity of the instrument would be undermined if universities whose students are more exposed to international student exchange schemes are located in regions where more job opportunities are available. To control for this possibility, I include a set of dummies for region of university location among the explanatory variables of the model.

In line with the approach used by Parey and Waldinger (2011), even though the dependent variables of equations 3 and 4 are both dichotomous, linear models are used for every step of the 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 nonlinearity 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 my measure of labor 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, using Eurostat data, Ruediger, Barreto Araujo, and Ross (2013) find that between 2003 and 2007 in Italy the unemployment rate among people between the ages of 20 and 34 who possess either a first-level or a second-level university degree was 12.8 percent, whereas the corresponding average figure for the European Union was 7.1 percent. Hence, there is a strong need to identify those programs/courses/activities offered by universities that make graduates more employable.

3. RESULTS

Table 2[15] presents estimates of the effect of participation in study abroad programs on graduates' probability of being in employment three years following graduation. Column 1 reports estimates from a simple OLS model (i.e., equation 1) that comprises all control variables but does not include university and discipline fixed effects. The relevant coefficient is small and statistically insignificant, suggesting that studying abroad has a negligible influence on future employment prospects. In Column 2, I add university and discipline fixed effects to the 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. All the fixed effects are found to be statistically highly significant.[16]

As argued earlier, however, the fixed effects regression framework does not address all concerns of omitted variable bias. Therefore, in an attempt to tackle concerns about any remaining bias, I estimate the UDFEs-IV model. 2SLS first-stage results are presented in column 3 of table 2. The coefficient on the excluded instrument is positive and statistically significant from zero at the 1 percent level. It indicates that a 1 percent increase in the proportion of available places on study abroad programs increases an individual's probability of studying abroad by about 0.41 percentage points. These estimates are close to those obtained by previous studies that use a comparable instrument. For instance, Parey and Waldinger (2011) find a similar effect for German graduates as the size of the coefficient on the relevant instrument is very close (i.e., 0.449) to my estimates. The value of the F-statistic suggests that the correlation between the instrument and participation in study abroad programs is high enough that there is no weak instrument problem. A rule of thumb put forward by Bound, Jaeger, and Baker (1995) and Staiger and Stock (1997) is that the F-statistic should be larger than 10, or at least larger than 5. The F-statistic clearly exceeds these thresholds. Column 4 of table 2 reports the main 2SLS second-stage results. I find that the 2SLS point estimate of the effect of study abroad program participation on employment likelihood is positive and statistically significant at the 5 percent level. The size of the effect is considerably larger than that associated with my previous estimates. Employment probability is increased by about 22.9 percentage points as a result of a study abroad experience. To put this in a useful context,

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

16. If these regressions are estimated 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 0.007 (0.006) and 0.008 (0.005), respectively.

Table 2. Estimates of the Effect of Studying Abroad on Subsequent Employment Likelihood

Model Estimation Method Dependent Variable	OLS Employment (1)	UDFEs OLS Employment (2)	UDFEs-IV 2SLS 1st Stage Participation in Study Abroad Programs (3)	UDFEs-IV 2SLS 2nd Stage Employment (4)
Constant	0.697*** (0.049)	0.624*** (0.052)	−0.063 (0.045)	0.637*** (0.051)
Participation in study abroad programs	0.008 (0.007)	0.010 (0.007)		0.229** (0.114)
Exposure to study abroad programs			0.410*** (0.059)	
Controls	Yes	Yes	Yes	Yes
Discipline FEs	No	Yes	Yes	Yes
University FEs	No	Yes	Yes	Yes
Joint significance Discipline FEs (p-value)		39.22 (0.000)		402.78 (0.000)
Joint significance University FEs (p-value)		5547.39 (0.000)		450000 (0.000)
F test of excluded instrument (p-value)			48.95 (0.000)	
Observations	32,119	32,119	32,119	32,119

Notes: Standard errors adjusted for clustering at university level are in parentheses. Controls include age, gender, nationality, marital status, children, area of residence, mother's education, father's education, final university grade, work experience during university, high school track (vocational or academic), final high school grade, type of university degree (first-level or second-level), type of university attended (public or private), regularly attended classes at university, month of graduation, time taken to complete the degree, region of university location, PhD degree, master's degree, passed the professional practice examination, and interactions between gender and marital status, between gender and children, and between academic high school track and final high school grade. FE: fixed effect.
***Statistically significant at the 1% level; **statistically significant at the 5% level.

according to my estimates, the positive employment effect triggered by participation in study abroad programs practically compensates the negative employment effect associated with living in southern regions (relative to living in northern regions). The magnitude of the employment-enhancing effect of studying abroad is found to be slightly greater than that related to having continuously worked during university (relative to not having worked).

The large IV estimates, compared with the OLS estimates, are suggestive of the presence of negative selection into study abroad programs. This means there may be individual-level motivations for studying abroad that are correlated with unobserved factors exerting a negative impact on future employment prospects. Although it is hard to identify these factors without access to more specific information, one can think of at least three conjectures that can

explain this. First, as suggested by several studies (see, e.g., Waters and Brooks 2010; Llewellyn-Smith and McCabe 2008), a large number of students choose to study abroad not because they want to develop heightened intercultural awareness or for other academic reasons, but because they seek adventure and excitement.[17] There is also some evidence that many Italian students view the study abroad experience as an opportunity to put less effort into study since examinations may be easier at foreign universities. In a recent scandal, the dean of the School of Economics of the University of Bari became suspicious about the increasing number of applications to study at certain universities in Eastern Europe. After an investigation, he decided to stop students from going to these institutions given their poor examination standards (Barile 2011). Second, the negative OLS bias may arise from the decision to study abroad being associated with unobserved characteristics related to the ability to develop and maintain social connections in Italy. Students with a poor social network may be more likely to engage in an international experience as they perceive the psychological cost of studying abroad to be lower relative to those who have a lot of friends and contacts.[18] In light of this, given that in many labor markets jobs are frequently obtained through social ties and connections with local employers, a large number of study abroad program participants may face lower employment prospects once they return to Italy.[19] The IV estimation procedure may appropriately correct for this negative bias. Third, although unobserved parental attributes may influence students' decision to study abroad, they may also affect the extent to which graduates are choosy about the job they take. For example, it may take some time before students from wealthy backgrounds find employment as they may be willing to accept only high-quality jobs.

To enhance the credibility of the combined fixed effects instrumental variable results, a number of robustness tests were performed. First, although the inclusion of university fixed effects allows me to control for university quality that could be correlated with both participation in study abroad programs and future employment prospects, it may also be important to control for the quality of disciplines taught at universities. It is possible that some universities do not have a great overall reputation, but they are well known for their

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17. The findings of the qualitative study by Waters and Brooks (2010) are consistent with my results. They argue that, although many disengaged and unmotivated students decide to study abroad, such an experience may also turn out to be very beneficial for them in terms of employment prospects. This is the reason they call these students "accidental achievers."

18. Research has shown that there are perceived psychological barriers that act as a deterrent to study abroad. These perceived problems include missing family/friends and lack of emotional support (Bakalis and Joiner 2004).

19. Several studies (see, e.g., Pistaferri 1999) highlight the crucial role played by informal job search channels in Italy.

programs in specific disciplines. To address this issue, I constructed a suitable quality indicator using data from performance-based league tables of Italian universities published in 2005 by *La Repubblica* newspaper[20] and based on the analysis conducted by the Centre for Social Studies. These data are available at discipline level and are designed to provide comparative information on the performance of higher education institutions. My measure is an average of the scores received in the following areas: (1) teaching, (2) research outcomes, (3) student progression and achievement, and (4) faculty profile.[21] Column 1 of table 3 presents IV estimates when this indicator is added to the model.[22] The size of the relevant coefficient is similar to the corresponding one reported in column 4 of table 2 and is statistically significant, though only marginally.

Second, I include in the sample those graduates who do not have a job, are not studying, and are not seeking employment. The rationale for this is that, if there is a discouraged worker effect, this group of inactive individuals might constitute the most unsuccessful graduates. The IV estimates reported in column 2 of table 3 show that the magnitude of the effect related to study abroad program participation continues to be large even with the inclusion of these graduates.

Third, I exclude work experience during university from the covariates. Students may be more likely to work during university 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 study abroad helped students to obtain a job before completing university. Therefore, the inclusion of work experience during university may attenuate the effect of study abroad program participation on the employment likelihood of graduates. As shown in column 3 of table 3, however, this exclusion does not significantly affect the results.

Fourth, in an attempt to better control for the effect of local labor market conditions, I drop those graduates living abroad from the sample and include regional unemployment rate by gender[23] in the specification. The results presented in column 4 of table 3 show that the estimate of the effect of study abroad program participation is largely insensitive to these changes. In line with expectations, the coefficient on unemployment rate is negative and statistically significant.

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20. These data refer to the academic year 2003–04 and are available at www.repubblica.it/speciale/ 2005/guida_universita/.
21. In each of these areas a score between 0 and 110 is awarded.
22. One may observe that the sample size has decreased due to missing information on the quality indicator for some disciplines across some universities.
23. The average regional unemployment rate during the 2004–07 period is used.

Table 3. Robustness Tests—Estimates of the Effect of Studying Abroad on Graduates' Destinations (UDFEs-IV)

	Inclusion of a Measure for Discipline Quality among the Covariates (1)	Inclusion in the Sample of Graduates Who Do Not Have a Job, Are Not Studying, and Are Not Seeking Employment (2)	Elimination of Work Experience during University from the Covariates (3)	Inclusion of Regional Unemployment Rate among the Covariates and Elimination of Graduates Living Abroad (4)	Inclusion in the Sample of All Graduates Who Are Studying as Well as Those Who Do Not Have a Job, Are Not Studying, and Are Not Seeking Employment (5)
Dependent Variable	Employment	Employment	Employment	Employment	Employment or further study
Constant	0.790***	0.667***	0.868***	0.869***	0.864***
	(0.065)	(0.047)	(0.054)	(0.052)	(0.039)
Participation in study abroad programs	0.247**	0.238***	0.243***	0.213***	0.160**
	(0.147)	(0.117)	(0.125)	(0.107)	(0.073)
Controls	Yes	Yes	Yes	Yes	Yes
Discipline FEs	Yes	Yes	Yes	Yes	Yes
University FEs	Yes	Yes	Yes	Yes	Yes
Joint significance Discipline FEs	392.70	281.79	354.95	376.35	339.27
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Joint significance University FEs	130000	320000	380000	390000	330000
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Indicator for quality of disciplines across universities	0.0002				
	(0.0005)				

Table 3. Continued.

	Inclusion of a Measure for Discipline Quality among the Covariates (1)	Inclusion in the Sample of Graduates Who Do Not Have a Job, Are Not Studying, and Are Not Seeking Employment (2)	Elimination of Work Experience during University from the Covariates (3)	Inclusion of Regional Unemployment Rate among the Covariates and Elimination of Graduates Living Abroad (4)	Inclusion in the Sample of All Graduates Who Are Studying as Well as Those Who Do Not Have a Job, Are Not Studying, and Are Not Seeking Employment (5)
Dependent Variable	Employment	Employment	Employment	Employment	Employment or further study
Unemployment rate				−0.012***	
				(0.003)	
First-stage F test of excluded instrument	48.95	55.23	49.05	55.22	58.69
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	24,108	36,023	32,119	31,465	39,508

Notes: Standard errors adjusted for clustering at university level are in parentheses. Controls include age, gender, nationality, marital status, children, area of residence, mother's education, father's education, final university grade, work experience during university, high school track (vocational or academic), final high school grade, type of university degree (first-level or second-level), type of university attended (public or private), regularly attended classes at university, month of graduation, time taken to complete the degree, region of university location, PhD degree, master's degree, passed the professional practice examination, and interactions between gender and marital status, between gender and children, and between academic high school track and final high school grade.
FE: fixed effect.
*** Statistically significant at the 1% level; **statistically significant at the 5% level; *significant at the 10% level.

Fifth, in line with the approach of Smith, McKnight, and Naylor (2000), who look at the first destinations of UK graduates, I include in the sample all those individuals who are studying as well as those who are inactive, and use an alternative binary dependent variable that takes on the value 1 if the graduate is employed or in further study and 0 if the graduate is unemployed or inactive. The IV estimates, which are reported in column 5 of table 3, indicate that the effect triggered by participation in study abroad programs is still positive and significant, though its magnitude is lower than that found in previous IV estimates. Specifically, these results suggest internationally mobile students are about 16 percentage points more likely to enter further study and employment relative to their peers who did not study abroad.

Next, I look at whether the effect of participation in study abroad programs on future employment prospects varies by family background. To investigate this issue, the sample is split into three subgroups according to parents' highest educational attainment: (1) graduates from very disadvantaged backgrounds—that is, those with parents who both have only completed primary education or not even that, (2) graduates from disadvantaged backgrounds—that is, those with at least one parent who has either lower or upper secondary education, and (3) graduates from advantaged backgrounds—that is, those with one or both parents who have a university degree. UDFEs-IV estimates for these subgroups are reported in table 4.

As observed by Antman (2011), the instrument's strength tends to diminish when the sample is decomposed into subgroups. Nevertheless, 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 is driven by the smaller sample size for graduates from these backgrounds relative to the sample size for those from disadvantaged backgrounds. The magnitude of the coefficient on the instrument is in fact reasonably similar across the three subgroups. 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. 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 the other two backgrounds is slightly higher than that presented in column 4 of table 2. Although this coefficient is statistically significant at the 5 percent level for graduates from disadvantaged backgrounds, however, it is statistically indistinguishable from zero for those from advantaged backgrounds.

Table 4. Heterogeneous Effects—Estimates of the Effect of Studying Abroad on Subsequent Employment Likelihood (UDFEs-IV)

Dependent Variable	Graduates from Very Disadvantaged Backgrounds		Graduates from Disadvantaged Backgrounds		Graduates from Advantaged Backgrounds	
	1st Stage Participation in Study Abroad Programs	2nd Stage Employment	1st Stage Participation in Study Abroad Programs	2nd Stage Employment	1st Stage Participation in Study Abroad Programs	2nd Stage Employment
Constant	−0.236*** (0.062)	0.804*** (0.105)	−0.086** (0.042)	0.790*** (0.064)	−0.421*** (0.083)	0.721*** (0.148)
Participation in study abroad programs		−0.119 (0.250)		0.261** (0.123)		0.241 (0.203)
Exposure to study abroad programs	0.471*** (0.108)		0.400*** (0.062)		0.394*** (0.091)	
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Discipline FEs	Yes	Yes	Yes	Yes	Yes	Yes
University FEs	Yes	Yes	Yes	Yes	Yes	Yes
Joint significance Discipline FEs (p-value)		40.33 (0.000)		322.02 (0.000)		193.10 (0.000)
Joint significance University FEs (p-value)		150000 (0.000)		180000 (0.000)		360000 (0.000)
F test of excluded instrument (p-value)	19.12 (0.000)		41.16 (0.000)		18.97 (0.000)	
Observations	3,637	3,637	20,924	20,924	7,558	7,558

Notes: Standard errors adjusted for clustering at university level are in parentheses. Controls include age, gender, nationality, marital status, children, area of residence, final university grade, work experience during university, high school track (vocational or academic), final high school grade, type of university degree (first-level or second-level), type of university attended (public or private), regularly attended classes at university, month of graduation, time taken to complete the degree, region of university location, PhD degree, master's degree, passed the professional practice examination, and interactions between gender and marital status, between gender and children, and between academic high school track and final high school grade. FE: fixed effect.

*** Statistically significant at the 1% level; ** statistically significant at the 5% level.

4. CONCLUSIONS

Over the past decades in Europe, a growing number of students have spent some time abroad during their university studies. Because it is often claimed that international educational mobility schemes help individuals to prepare for the labor market, this paper uses data on a large sample of recent Italian graduates to investigate the extent to which students' participation in study abroad programs impacts their subsequent employment likelihood. Ordinary least squares fixed effects and instrumental variable fixed effects regression techniques are used in an attempt to correct the endogeneity problem. My instrumental variable strategy exploits cross-university and cross-discipline variation in a student's exposure to study abroad programs.

The estimated effect of study abroad program participation using the instrumental variable 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. The university and discipline fixed effects instrumental variable estimates indicate that graduates who studied abroad during university are about 22.9 percentage points more likely to be in employment three years following graduation relative to their non-mobile peers. This effect is mainly driven by the impact that study abroad programs have on the employment prospects of graduates from disadvantaged (but not very disadvantaged) backgrounds, though positive but imprecise effects are also found for graduates from advantaged backgrounds.

These results are relevant for educational policy as they suggest that study abroad experience provides many students with skills and knowledge that can significantly enhance their employment opportunities after graduation. This rigorous analysis of the effect of studying abroad on subsequent employment prospects should be useful in informing international organizations (e.g., EC) and national governments as they consider new initiatives to encourage cross-border student mobility.

REFERENCES

Angrist, Joshua D. 2001. Estimation of a limited dependent variable models with dummy endogenous regressors: Simple strategies for empirical practice. *Journal of Business & Economic Statistics* 19(1):2–16. doi:10.1198/07350010152472571

Angrist, Joshua D. 2006. Instrumental variables methods in experimental criminological research: What, why and how. *Journal of Experimental Criminology* 2(1):23–44. doi:10.1007/s11292-005-5126-x

Antman, Francisca M. 2011. The intergenerational effects of paternal migration on schooling and work: What can we learn from children's time allocations? *Journal of Development Economics* 96(2):200–208. doi:10.1016/j.jdeveco.2010.11.002

Bakalis, Steve, and Therese A. Joiner. 2004. Participation in tertiary study abroad programs: The role of personality. *International Journal of Educational Management* 18(5):286–291. doi:10.1108/09513540410543420

Barile, Luca. 2011. Esami facili all'estero preside Economia Bari cancella 2 paesi Erasmus. *La Gazzetta del Mezzogiorno,* 11 April. Available www.lagazzettadelmezzogiorno.it/GdM_traduci_notizia.php?IDNotizia=416103&IDCategotia=. Accessed 20 January 2015.

Bound, John, David A. Jaeger, and Regina M. Baker. 1995. Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. *Journal of the American Statistical Association* 90(430):443–450.

Cammelli, Andrea. 2001. Laureati italiani ed esperienze di studio all'estero. *Polis* 15(3):453–473.

Card, David. 2001. Estimating the return to schooling: Progress on some persistent econometric problems. *Econometrica* 69(5):1127–1160. doi:10.1111/1468-0262.00237

Di Pietro, Giorgio. 2012. Does studying abroad cause international labor mobility? Evidence from Italy. *Economics Letters* 117(3):632–635. doi:10.1016/j.econlet.2012.08.007

Di Pietro, Giorgio, and Lionel Page. 2008. Who studies abroad? Evidence from France and Italy. *European Journal of Education* 43(3):389–398. doi:10.1111/j.1465-3435.2008.00355.x

Doorbar, Allison. 2003. The US study abroad market: What are the barriers to purchase? *Institute of International Education (IIE). Networker* (Fall):58–60.

Fielden, John, Robin Middlehurst, and Steve Woodfield. 2007. *Global horizons for UK Students. A guide for universities.* London: Council for Industry and Higher Education.

Heckman, James J. 1990. Varieties of selection bias. *American Economic Review* 80(2):313–318.

Heckman, James J., and Thomas E. MaCurdy. 1985. A simultaneous equations linear probability model. *Canadian Journal of Economics. Revue Canadienne d'Economique* 18(1):28–37. doi:10.2307/135111

King, Russel, Allan Findlay, and Jill Ahrens. 2010. International student mobility literature review. London: Final report to Higher Education Funding Council for England.

Llewellyn-Smith, Catherine, and Vivienne S. McCabe. 2008. What is the attraction for exchange students: The host destination or host university? Empirical evidence from a study of an Australian university. *International Journal of Tourism Research* 10(6):593–607. doi:10.1002/jtr.692

Matherly, Cheryl. 2005. Effective marketing of international experiences to employers. In *Impact of education abroad on career development,* edited by Martin Tillman, pp. 9–10. Stamford, CT: American Institute for Foreign Study.

Orahood, Tammy, Larisa Kruze, and Denise E. Pearson. 2004. The impact of study abroad on business students' career goals. *Frontiers: The Interdisciplinary Journal of Study Abroad* 10(7):117–130.

Oosterbeek, Hessel, and Dinand Webbink. 2011. Does studying abroad induce a brain drain? *Economica* 78(310):347–366. doi:10.1111/j.1468-0335.2009.00818.x

Parey, Matthias, and Fabian Waldinger. 2011. Studying abroad and the effect of international labour market mobility: Evidence from the introduction of Erasmus. *Economic Journal* 121(551):194–222. doi:10.1111/j.1468-0297.2010.02369.x

Pistaferri, Luigi. 1999. Informal networks in the Italian labor market. *Giornale degli Economisti e Annali di Economia* 58(3–4):355–375.

Ruediger, Marco Aurelio, Francisco Barreto Araujo, and Steven Dutt Ross, Sr. 2013. Immigration as a strategic vector for the socio-economic and institutional development of Brazil. Paper presented at the annual meeting of the American Political Science Association, Chicago, August–September.

Saarikallio-Torp, Miia, and Jannecke Wiers-Jenssen. 2010. Nordic students abroad. Student mobility patterns, student support systems and labour market outcomes. Finland Studies in Social Security and Health Publication No. 110, The Social Insurance Institution.

Smith, Jeremy, Abigail McKnight, and Robin Naylor. 2000. Graduate employability: Policy and performance in higher education in the UK. *Economic Journal* 110(464):F382–F411. doi:10.1111/1468-0297.00546

Staiger, Douglas, and James H. Stock. 1997. Instrumental variables regression with weak instruments. *Econometrica* 65(3):557–586. doi:10.2307/2171753

Teichler, Ulrich, and Kerstin Janson. 2007. The professional value of temporary study in another European country: Employment and work of former ERASMUS students. *Journal of Studies in International Education* 11(3–4):486–495. doi:10.1177/1028315307303230

Waters, Johanna, and Rachel Brooks. 2010. Accidental achievers? International higher education, class reproduction and privilege in the experiences of UK students overseas. *British Journal of Sociology of Education* 31(2):217–228. doi:10.1080/01425690903539164

Wiers-Jenssen, Jannecke. 2008. Career impacts of student mobility. Stumbling block or stepping stone? In *Borderless knowledge,* edited by Åse Gornitzka and Liv Langfeldt, pp. 79–101. New York: Springer. doi:10.1007/978-1-4020-8283-2_5