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Changes in socioeconomic inequality in access to study abroad programs: A cross-country analysis[☆]

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ABSTRACT

The growing evidence about the benefits of studying abroad calls for increased public efforts to equalize study abroad opportunities among university students from different socioeconomic backgrounds. Using student-level data from the nationally representative surveys of three European countries (Italy, France and Germany) between the 2000s and mid-2010s, this paper investigates how the social gap in access to study abroad programs changed over time and what are the factors driving these changes. Logistic regressions are used in order to identify the determinants of study abroad program participation and a decomposition technique is employed in an attempt to both determine how much of the gap each factor explains and compare its relative contribution over time. The results indicate that, not only has disparity in study abroad participation rate between students from more and less advantaged backgrounds not decreased in any of the countries considered here, but there is consistent evidence showing that it has increased in Germany. Differences in earlier educational trajectories and performance between these two groups of students are important predictors of the gap. However, a large part of this gap remains unexplained, and this underscores the important role played by unobserved or difficult-to-measure factors in accounting for inequality.

1. Introduction

There is a relatively large consensus among academics and policy-makers that spending time abroad during undergraduate university studies is highly beneficial to students. Not only does studying abroad contribute to their personal development (Zimmermann & Neyer, 2013), but, following university completion, it may enhance their employability (Di Pietro, 2015) and earnings (Kratz & Netz, 2018). Participants in study abroad programs have the opportunity to acquire a wide range of skills (such as, for instance, intercultural competence, global awareness and foreign language skills) that can help them successfully compete in the labour market. Many companies, and especially multinationals, are interested in graduates with international education experience (Fielden, 2007) and often screen job applicants on the basis of whether they have studied abroad.

However, several papers indicate that international student mobility is socially selective, with a large number of study abroad places taken up by students from more advantaged backgrounds. Given the above

considerations, this implies that studying abroad may constitute a channel by which the labour market position of students from more advantaged backgrounds is further strengthened compared with those from less advantaged backgrounds (Di Pietro, 2014). Increasing participation in study abroad programs among students from less advantaged backgrounds is therefore crucial since it would contribute to address the problem of transferring inequality from the education system to the labour market (Netz & Finger, 2016). But there is also another reason why a wider inclusion is important. There is, in fact, some evidence suggesting that returns to studying abroad are heterogeneous and particularly depend on family background. Students from less advantaged backgrounds are likely to be the ones benefiting most from an international education experience. Di Pietro (2015) finds that study abroad programs improve the employment prospects of especially disadvantaged graduates as they may provide them with an opportunity to develop many marketable skills that their background would not otherwise have exposed them to. Sorrenti (2017) complements this finding by showing that foreign language skills are rewarded in the

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labour market and that students from low socioeconomic backgrounds significantly increase their probability of becoming proficient in a foreign language as a result of their study abroad experience. In addition to labour market returns, it is possible that other types of returns from an international education experience are unevenly distributed across students from different family backgrounds. For instance, participation in study abroad programs may be more effective in promoting European identity among students from less advantaged backgrounds. While several studies indicate that transnational interactions foster European identity (Recchi & Favel, 2009; Roeder, 2011), participants from families with a lower socioeconomic background may have had limited opportunities to interact across borders before their study abroad experience (Kuhn, 2016). Creating a European identity is the 'civic' rationale behind the Erasmus program (Papatsiba, 2006) and it is often considered as a crucial requirement for a sustainable level of legitimacy of the European Union (EU) (Bruter, 2003).

While EU policymakers have recognized study abroad programs as one of the core elements of the Bologna Process in 1999, they have also acknowledged that more efforts should be made to reduce the social selectivity of studying abroad (Powell & Finger, 2013). The commitment to social inclusion has been more recently emphasized with the launch of the new Erasmus program, i.e. Erasmus+ (European Commission, 2014).

With this background in mind, the purpose of this study is twofold. First, it examines changes in the relationship between family background and participation in study abroad programs among university students in France, Germany and Italy between the 2000s and mid-2010s. Although there are a significant number of studies examining the impact of social status on the probability of studying abroad among university students, the large majority of them focus on one or more periods/cohorts in a single country (Finger, 2011; Lörz & Krawietz, 2011) or one period/cohort in several countries (Di Pietro and Page, 2008; Rodrigues, 2013), with only a few assessing changes across periods/cohorts in various countries. One exception is the paper by Souto-Otero (2008). Using data from a survey conducted in different countries in the academic years 1997/1998 and 2004/2005, he looks at changes in the socioeconomic background of students who participated in the Erasmus program. He concludes that access to this program seems to have widened because there has been a decrease in the proportion of Erasmus participants with at least one parent working in executive, professional or technical occupations. Although our paper focuses on a smaller number of countries, it includes more recent years and covers a longer period of time than that of Souto-Otero (2008).

The second purpose of this study is to gain an understanding of the mechanisms driving the trends in social inequality in access to study abroad programs in the three aforementioned countries, and the extent to which similar patterns hold across them. However, in pursuing such goal, our approach is more empirical rather than theoretical. We use a decomposition technique based on logistic regression in order to quantify the relative importance of different factors in contributing to this gap. A similar decomposition analysis has been conducted by Lörz, Netz, and Quast (2016), but they examine only one cohort of students in a single country (i.e. Germany). By conducting a cross-country comparative analysis, we significantly improve the external validity (i.e. generalizability) of our findings with respect to the countries considered. Additionally, our analysis allows us to compare the changes over time in the contributions of several student characteristics that are thought to explain the social gap in study abroad program participation.

We focus our attention on Italy, France and Germany for four reasons. First, looking at the statistics on the Erasmus program, they are among the biggest sender countries in terms of students going abroad. Second, there has also been a positive trend in the number of Erasmus participants in these countries in the last 15 years. Third, Italy, France and Germany are the three main initiators of the Bologna Process (Dobbins & Knill, 2017) where international student mobility is widely

promoted. Fourth, Italy, France and Germany are all characterised by relatively large inequalities in educational attainment— in contrast to, for instance, Scandinavian countries (Immerfall & Therborn, 2009).

The remainder of the paper is organised as follows. Section 2 presents a theoretical framework and the hypotheses to be tested. Section 3 describes the data and the variables employed in our empirical work. Section 4 outlines the methodology used for the estimation of the effect of family background on the probability of studying abroad and for the decomposition analysis. Section 5 illustrates and discusses the regression and decomposition results. Section 6 concludes.

2. Theoretical background and hypotheses

Several arguments suggest that the social selectivity of studying abroad may have persisted or increased across our selected countries. Students from advantaged backgrounds may increasingly want to participate in study abroad programs, even at a higher rate than their less advantaged peers, as a way to mark 'distinction' and signal privilege (Ballatore & Ferede, 2013). This can be interpreted as a form of cultural distinction that allows them to maintain their dominant position within the social structure (Bourdieu, 1984).

As participation in university education continues to expand, acquiring international credentials (especially at prestigious institutions) helps students from higher socioeconomic status to differentiate themselves from the masses. Munk (2009) considers participation in study abroad programs as a transnational investment in informational capital that ensures reproduction of the positions of individuals and families in the social space through its impact on employment and income. In a more and more globalised economy, the acquisition of cosmopolitan capital is a distinctive asset that may provide labour market advantages. Furthermore, participation in study abroad programs may serve to signal an elite status. As observed by Ballatore and Ferede (2013), having a child who studied abroad may send the message that he/she is from a wealthy family given the costs associated with this experience. In fact, although the large majority of participants in study abroad programs receive a scholarship, the evidence suggests that this does not fully cover the cost of living abroad (Souto-Otero, Huisman, Beerkens, de Wit, & Vujic, 2013). This deters participation among many students, especially among those from less advantaged backgrounds who are less likely to receive financial support from their parents while studying abroad.

Additional considerations specific to each of the countries considered here reinforce the idea that the social gap in access to study abroad programs may have persisted or widened. In France, students from upper class backgrounds who could not gain entrance into the highly selective *Grandes Écoles* may increasingly attempt to circumvent the rigidity of the hierarchical French educational system by completing a study period at an elite foreign institution (Munk, 2009). In Italy, in light of the persistent and high unemployment among young graduates, students from more advantaged backgrounds may purposely decide to spend some time abroad during their undergraduate years given that a study abroad experience is especially highly valued by Italian employers (Van Mol, 2017). In Germany, the stratified nature of the educational system makes low-background students more likely to enrol at practically oriented institutions, such as universities of applied sciences, which provide fewer opportunities to study abroad compared with research universities that are typically attended by high-background students (Netz, 2015). Our first hypothesis is:

H1. Social inequalities in study abroad programs have persisted or increased across Italy, France and Germany.

Our next hypotheses regard the mechanisms through which family background may influence study abroad program participation and whether they lead to wider or narrower social inequality.

Since students from more privileged backgrounds tend to show better academic performance than their peers from less privileged

backgrounds, they are more likely to prevail in selection procedures for study abroad scholarships/places that are often based on academic merit. Differences in students' actual level of academic performance among those from different socioeconomic backgrounds are called 'primary' effects (Boudon, 1974). It is unquestioned that social class origin is related to educational achievement (Bukodi & Goldthorpe, 2012). The cultural capital theory (Bourdieu, 1984) postulates that, in contrast to children from low socioeconomic status, those from high socioeconomic status are familiar with academic culture (in the form of language, ways of presenting arguments, etc.), and this allows them to have better academic performance. It is also possible that social inequality in educational performance reflects differences in economic resources. Students with fewer parental economic resources may be unable to focus on academic work as they have to spend significant time on paid work to support themselves (Hansen & Mastekaasa, 2006). As a result, the following hypothesis is proposed:

H2. Academic performance contributes to explain the social gap in study abroad program participation.

The social selectivity of studying abroad can also be explained by educational decisions, which constitute an important mechanism of reproduction of social inequality (Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996). 'Secondary' effects are those resulting from educational choices made by children from different social classes within the range of choice that their previous performance allows them (Jackson, Erikson, Goldthorpe, Yaish, & Cox, 2007). In our context, it is important to note that students from less advantaged backgrounds are more likely to attend vocational schools, and this significantly reduces their chances of participating in study abroad programs. These students tend to avoid academic tracks, which are perceived to be associated with a higher risk of failure compared to vocationally oriented pathways (Hillmert & Jacob, 2010). In contrast to vocational schools, academically oriented ones offer a curriculum and learning opportunities that are more conducive to studying abroad. They provide, for instance, better opportunities to learn foreign languages, whereas lack of foreign languages skills is often considered to be an important barrier to international student mobility. As a consequence, we assume:

H3. Participation in vocational education accounts for a part of the social gap in study abroad program participation.

Another channel through which social class origin may influence the likelihood of participating in study abroad programs lies in field of study. University students from different socioeconomic status may systematically choose subject areas offering different opportunities to study abroad. However, while academic performance and educational choices are likely to work in the direction of sustaining social inequality in access to study abroad programs, the opposite may occur for field of study. Students from more advantaged backgrounds are more likely to choose more prestigious² and selective subjects (e.g. medicine) that are, however, typically associated with a lower probability of studying abroad (Böttcher et al., 2016). On the other hand, lower class students tend to be attracted to fields of study with weaker labour market value (e.g. soft sciences and humanities), but that are characterised by greater opportunities to study abroad. The rational action theory (Boudon, 1974; Breen & Goldthorpe, 1997) suggest that children from socioeconomically disadvantaged families have a higher propensity to enrol

² Triventi (2013) observes that not all European countries have the same view about what prestigious subjects are. For instance, while medicine is classified as a prestigious subject everywhere, this is not always the case for engineering. Additionally, related to this subject, it is important to note that in Germany engineering is more often chosen by students from less advantaged backgrounds. Given that students of this discipline have a relatively low exposure to study abroad programs (Isserstedt & Schnitzer, 2005), it is expected that in this country such a subject works in the direction of increasing rather than decreasing the social selectivity of studying abroad.

in shorter or less demanding programs in an attempt to reduce the risk of dropout or delay in graduation. By contrast, upper class children have more autonomy in terms of subject choice and often choose fields of study with higher labour market rewards (Triventi, Vergolini, & Zanini, 2017). Therefore, our final hypothesis is:

H4. Field of study acts to decrease the social gap in study abroad program participation.

3. Data

Three cross-sectional nationally representative individual-level datasets are examined:

Italy: *Indagine sui percorsi di studio e di lavoro dei diplomati* (Survey on upper secondary school leavers' employment and study pathways), which is conducted by the Italian National Statistical Institute (ISTAT). The following waves (years) are considered: 2004, 2007, 2011 and 2015.

France: *Enquête conditions de vie des étudiants* (Survey on students' living conditions), which is conducted by the National Observatory of Student Life (OVE). The following waves (years) are considered: 2000, 2003, 2006, 2010 and 2013.

Germany: *Sozialerhebung* (Social Survey), which is conducted by the German Centre for Higher Education Research and Science Studies (DZHW). The following waves (years) are considered: 2000, 2003, 2006, 2009 and 2012.

Survey weights included in each survey are used in order to produce nationally representative estimates in all the analyses.

While the French and German surveys are specifically addressed to university students, this is not the case for the Italian survey. Participants in this survey are upper secondary school leavers who are interviewed 3 or 4 years after the end of their studies.³ Given that university enrolment is one of the possible destinations of recent upper secondary school leavers, through different waves of the Italian survey one can identify cohorts of university students in their third or fourth year of studies.⁴ In an attempt to homogenise samples and improve the comparability of data across countries, we only select French and German university students who are at a similar stage in their academic career to the Italian students.⁵ Orr, Schnitzer, and Frackmann (2008), analysing data from several European countries (including Germany, Italy and France), show that students tend to go abroad during their third or fourth year of studies.

In this paper, the family background is based on the highest level of education achieved by any of the parents. Specifically, two categories of social origin are distinguished: students with at least one parent with a university degree and students of parents without university degrees. This approach is in line with that adopted by previous papers (e.g. Netz & Finger, 2016). However, Section 5 investigates the sensitivity of the results when parental occupation⁶ is used as a proxy for family background.

³ While in the 2004 and 2007 waves upper secondary school leavers are contacted 3 years following the completion of their studies, in the 2011 and 2015 waves they are interviewed 4 years after the end of their studies.

⁴ Unfortunately, in the 2015 wave, in contrast to earlier waves, there is no information on when students enrolled at university. This is not a big concern since in Italy the very large majority of students start university immediately after upper secondary school completion. However, this means that our sample for the 2015 cohort comprises, in addition to fourth year students, also some students who may be in their third, second and even first year of studies.

⁵ Specifically, third year students are selected in the 2000, 2003 and 2006 waves of both the German and French surveys. Fourth year students are selected in the 2010 and 2013 waves of the French survey and in the 2009 and 2012 waves of the German survey.

⁶ Unfortunately parental income cannot be used as a proxy for family background as information on this variable is unavailable for Italy and Germany.

The dependent variable of our empirical investigation is a dichotomous measure indicating whether the student has spent some time at a foreign higher education institution during his/her university studies. Therefore, this definition excludes other study abroad experiences such as, for instance, internships, language courses, summer schools, etc. While such information is provided in the French and German surveys, it is unavailable in the Italian survey. One should also note that the wording of the questions about parental education and participation in study abroad programs is very similar across the surveys, thus ensuring a high degree of comparability.

As discussed in the previous Section, our key explanatory variables are vocational upper secondary school,⁷ subject of university study and academic performance (here measured by the grades students received at the end of upper secondary school⁸). The latter variable is however unavailable in the German survey. This is unfortunate as Lörz et al. (2016) show that in Germany students with a better final school grade display a higher probability of intending to study abroad. Gender and age at upper secondary school completion are included as control variables in our analysis. Women are found to be more likely to study abroad (Stroud, 2010), whereas younger students may lack a 'mobility culture' (Maiworm, 2001). Students with missing information on any independent variable are excluded from the analysis.⁹

Although we attempt to control for at least some dimensions of academic achievement/trajectory, as pointed out by Jerrim, Parker, Chmielewski, and Anders (2016), our measures are unfortunately limited in terms of cross-national comparability. For instance, while in Germany teachers have an important say on what secondary school track is the best fit for students, in Italy the role of teachers is minor and parents often take full responsibility for this decision. Similarly, there are differences across countries in what skills are being tested at the end of upper secondary school. Additionally, the sample size varies across countries, being much larger in Italy relative to France and Germany. This translates into a different statistical power to detect the effects of interest.

In Table 1, we report participation rate in study abroad programs in each cohort in each country among students from both more and less advantaged backgrounds, as well as the corresponding difference. While in Italy social selectivity in study abroad programs showed a modest increase (i.e. 0.5 percentage points), it rose considerably in France and Germany (i.e. by 5.0 percentage points in France and by 5.5 percentage points in Germany).

In Italy, participation rate in study abroad programs has risen throughout the period among students from both more and less advantaged backgrounds, though it has risen slightly faster among the

⁷ In Italy, upper secondary vocational schools comprise *istituti professionali*, *istituti tecnici*, *istituti magistrali* and *istituti d'arte*. In France, upper secondary vocational schools comprise *lycée professionnel* and *lycée technologique*. In Germany, in this category we include students who have a *Fachhochschulreife*, a qualification to enter a university of applied sciences, and those who have a *Fachgebundene Hochschulreife*, a qualification to enter a university of applied sciences or a specialist university.

⁸ Following the approach of Di Pietro and Page (2008), in Italy 'poor' means a score between 60 and 84; 'good' between 85 and 94; 'very good' between 95 and 99 and 'excellent' is 100. In France 'poor' is 'passable ou pas de mention'; 'good' is 'assez bien'; 'very good' is 'bien' and 'excellent' is 'très bien'.

⁹ Below are given information on the number of observations excluded from the final samples because of missing values on one or more independent variables: a) Italy: 234 (2004 wave), 0 (2007 wave), 356 (2011 wave) and 877 (2015 wave); b) France: 517 (2000 wave), 581 (2003 wave), 538 (2006 wave), 122 (2010 wave) and 282 (2013 wave); c) Germany 226 (2000 wave), 218 (2003 wave), 202 (2006 wave), 67 (2009 wave) and 62 (2012 wave). In some instances (e.g. 2015 Italian wave) many of missing values relate to parental education. However, as shown later in the paper, this does not seem to be a problem given that the results do not substantially change if parental occupation, which has lower missing values than parental education, is used to define family background.

Table 1

Participation rate in study abroad programs by family background and cohort.

Cohorts					
Italy					
	2004	2007	2011	2015	
Students from more advantaged backgrounds	0.056	0.065	0.080	0.088	
(N)	(1,750)	(2,735)	(2,634)	(2,752)	
Students from less advantaged backgrounds	0.031	0.035	0.052	0.058	
(N)	(6,610)	(9,839)	(9,169)	(7,954)	
Difference	0.025	0.030	0.028	0.030	
N	8,360	12,754	11,803	10,706	
France					
	2000	2003	2006	2010	2013
Students from more advantaged backgrounds	0.062	0.068	0.068	0.181	0.180
(N)	(1,319)	(1,189)	(1,441)	(1,339)	(1,387)
Students from less advantaged backgrounds	0.040	0.044	0.041	0.117	0.108
(N)	(2,536)	(2,302)	(2,725)	(2,274)	(1,964)
Difference	0.022	0.024	0.027	0.064	0.072
N	3,855	3,491	4,166	3,613	3,351
Germany					
	2000	2003	2006	2009	2012
Students from more advantaged backgrounds	0.039	0.044	0.048	0.163	0.154
(N)	(997)	(1,413)	(1,291)	(1,046)	(555)
Students from less advantaged backgrounds	0.043	0.036	0.023	0.114	0.102
(N)	(1,067)	(1,594)	(1,298)	(966)	(633)
Difference	-0.004	0.008	0.025	0.049	0.051
N	2,064	3,007	2,589	2,012	1,188

Notes: Survey weights are used. Third year students are included in the 2004 and 2007 cohorts in Italy as well as in the 2000, 2003 and 2006 cohorts in both France and Germany. All the other cohorts comprise fourth year students. Sources: ISTAT (Italy), OVE (France) and DZHW (Germany).

former than the latter. In France and Germany participation rate in study abroad programs is significantly higher in the two most recent cohorts relative to earlier cohorts among students from both socio-economic groups. This reflects the higher probability of having studied abroad among fourth year students relative to third year students. In Germany, between the 2000 and 2006 cohorts participation rate in study abroad programs increased steadily among students from more privileged backgrounds, while the opposite occurred among those from less privileged backgrounds.

Tables 2a–2c present descriptive statistics by family background and cohort in the Italian, German and French samples, respectively. In all countries and across all cohorts, university students from less advantaged backgrounds tend to be older, more likely to have attended vocational upper secondary schools and less likely to study medicine at university than those from more advantaged backgrounds. The proportion of students from less advantaged backgrounds studying Humanities, Economics or Law¹⁰ is higher than that from students from more advantaged backgrounds in all the Italian cohorts, in four French cohorts and in the two most recent German cohorts. In Italy, the proportion of men is higher among students from more advantaged backgrounds. In the other two countries, the gender social gap is smaller. However, while in all German cohorts except one the proportion of men is slightly higher among students from less advantaged backgrounds than among their more advantaged peers, the opposite happens in France.

¹⁰ Although this is a big subject category, it cannot be disaggregated because of problems related to the harmonization of data across the three selected countries. This is unfortunate as study abroad participation rate is likely to vary across Humanities, Economics and Law.

Table 2a
Descriptive statistics- Italy.

	Cohort							
	2004		2007		2011		2015	
	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds
Male	0.486 (0.500)	0.404 (0.491)	0.481 (0.500)	0.391 (0.488)	0.474 (0.499)	0.392 (0.488)	0.481 (0.500)	0.399 (0.490)
Vocational school	0.224 (0.417)	0.540 (0.498)	0.246 (0.431)	0.567 (0.496)	0.229 (0.420)	0.523 (0.500)	0.165 (0.371)	0.402 (0.490)
Age at upper secondary school completion								
< = 18	0.177 (0.381)	0.076 (0.265)	0.161 (0.367)	0.059 (0.236)	0.154 (0.361)	0.056 (0.230)	0.115 (0.319)	0.033 (0.180)
19	0.726 (0.446)	0.780 (0.414)	0.735 (0.442)	0.806 (0.396)	0.779 (0.415)	0.836 (0.371)	0.801 (0.400)	0.851 (0.356)
= > 20	0.098 (0.297)	0.144 (0.351)	0.104 (0.306)	0.135 (0.342)	0.067 (0.250)	0.108 (0.311)	0.084 (0.278)	0.115 (0.319)
Performance at the end of upper secondary school								
Poor	0.170 (0.375)	0.206 (0.405)	0.155 (0.362)	0.177 (0.381)	0.178 (0.382)	0.199 (0.399)	0.174 (0.379)	0.195 (0.396)
Good	0.222 (0.416)	0.263 (0.440)	0.221 (0.415)	0.237 (0.425)	0.242 (0.428)	0.257 (0.437)	0.261 (0.439)	0.290 (0.454)
Very good	0.224 (0.417)	0.226 (0.419)	0.210 (0.407)	0.218 (0.413)	0.239 (0.427)	0.222 (0.415)	0.252 (0.434)	0.271 (0.445)
Excellent	0.384 (0.486)	0.305 (0.460)	0.414 (0.493)	0.368 (0.482)	0.341 (0.474)	0.322 (0.467)	0.312 (0.464)	0.244 (0.430)
Subject studied at university								
Humanities	0.573 (0.495)	0.628 (0.483)	0.584 (0.493)	0.612 (0.487)	0.536 (0.499)	0.594 (0.491)	0.487 (0.500)	0.581 (0.493)
Economics or Law								
Engineering	0.211 (0.408)	0.169 (0.375)	0.188 (0.391)	0.162 (0.368)	0.195 (0.396)	0.162 (0.368)	0.180 (0.384)	0.155 (0.362)
Science	0.107 (0.309)	0.117 (0.321)	0.117 (0.322)	0.109 (0.311)	0.126 (0.332)	0.120 (0.325)	0.128 (0.334)	0.115 (0.319)
Medicine	0.097 (0.296)	0.069 (0.254)	0.099 (0.298)	0.100 (0.300)	0.131 (0.337)	0.105 (0.306)	0.199 (0.400)	0.134 (0.341)
Sport	0.013 (0.113)	0.016 (0.127)	0.012 (0.109)	0.017 (0.131)	0.012 (0.109)	0.019 (0.137)	0.006 (0.075)	0.016 (0.126)

Notes: Survey weights are used. Standard deviations are in parentheses. While the 2004 and 2007 cohorts comprise third year students, fourth year students are included in the 2011 and 2015 cohorts. The vocational school qualification is obtained by students who have successfully completed *istituti professionali*, *istituti tecnici*, *istituti magistrali* or *istituti d'arte*. Source: ISTAT.

4. Methodology

In this section, we sketch the methodological approaches used in this study to identify the factors affecting study abroad program participation, and to calculate how much of the social gap each of them can explain.

Let Y_i^* be the latent variable indicating the utility of studying abroad of student i . If $Y_i^* \geq 0$, the student chooses to study abroad, whereas if $Y_i^* < 0$, the student chooses not to study abroad. Suppose that the equation for Y_i^* can be written as:

$$Y_i^* = \beta_0 + \beta_1 Age_i + \beta_2 Male_i + \beta_3 MAdvantback_i + \beta_4 Acadperf_i + \beta_5 Vocational_i + \beta_6 Subject_i + \varepsilon_i \tag{1}$$

where Age_i is the student's age at upper secondary school completion; $Male_i$ is a dummy variable taking the value of 1 if the student is male, and 0 otherwise; $MAdvantback_i$ is a dummy variable taking the value of 1 if the student has at least one parent with a university degree, and 0 otherwise; $Acadperf_i$ is an indicator measuring the student's performance at the end of upper secondary school; $Vocational_i$ is a dummy variable taking the value of 1 if the student has attended vocational upper secondary schools, and 0 otherwise; $Subject_i$ is the subject studied at university by the student; and ε_i is the usual disturbance term that is assumed to be independent of the explanatory variables.

If one allows the independent variables, including the constant

term, to be represented by a vector X , then Eq. (1) becomes:

$$Y_i^* = X_i\beta + \varepsilon_i \tag{2}$$

Although Y_i^* is unobservable, it relates to an observable binary variable, Y_i , that takes the value of 1 if $Y_i^* \geq 0$ and the value of 0 if $Y_i^* < 0$. The probability that $Y_i = 1$ is:

$$p = pr[Y_i = 1|X_i] = F(X_i\beta) = \frac{e^{X_i\beta}}{1 + e^{X_i\beta}} \tag{3}$$

where F is the cumulative distribution function of the logistic distribution.

We first estimate separately in each country and for each cohort the average marginal effect of our proxy for family background on participation in study abroad programs. This is calculated as:

$$\partial p / \partial MAdvantback_i = \frac{1}{N} \sum \beta_3 \frac{e^{X_i\beta}}{(1 + e^{X_i\beta})^2} \tag{4}$$

In each country we look at changes over cohorts in the average marginal effect. Average marginal effects can be compared for similar models across different samples as they are insensitive to differences in unobserved heteroscedasticity across groups or over time (Mood, 2010).

However, an important drawback of the above model is that it constrains the effect of the independent variables to be equal across family backgrounds. This assumption seems to be too restrictive since

Table 2b
Descriptive statistics- Germany.

	Cohort									
	2000		2003		2006		2009		2012	
	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds
Male	0.499 (0.500)	0.565 (0.496)	0.491 (0.500)	0.520 (0.500)	0.522 (0.500)	0.531 (0.499)	0.407 (0.492)	0.388 (0.488)	0.518 (0.500)	0.530 (0.499)
Vocational school	0.050 (0.204)	0.185 (0.349)	0.075 (0.264)	0.189 (0.392)	0.106 (0.308)	0.237 (0.425)	0.077 (0.266)	0.143 (0.350)	0.144 (0.351)	0.257 (0.438)
Age at upper secondary school completion < = 18	0.100 (0.301)	0.052 (0.223)	0.099 (0.299)	0.063 (0.243)	0.089 (0.285)	0.047 (0.212)	0.094 (0.292)	0.067 (0.251)	0.114 (0.318)	0.061 (0.240)
19	0.321 (0.467)	0.237 (0.426)	0.335 (0.472)	0.233 (0.423)	0.354 (0.478)	0.253 (0.435)	0.337 (0.473)	0.279 (0.449)	0.266 (0.442)	0.231 (0.422)
= > 20	0.578 (0.494)	0.710 (0.454)	0.566 (0.496)	0.704 (0.457)	0.557 (0.497)	0.700 (0.458)	0.570 (0.495)	0.654 (0.476)	0.619 (0.486)	0.708 (0.455)
Subject studied at university										
Humanities, Economics or Law	0.569 (0.496)	0.550 (0.498)	0.525 (0.500)	0.509 (0.500)	0.474 (0.500)	0.473 (0.499)	0.525 (0.500)	0.586 (0.493)	0.479 (0.500)	0.519 (0.500)
Engineering	0.172 (0.378)	0.229 (0.421)	0.270 (0.444)	0.342 (0.474)	0.266 (0.442)	0.301 (0.459)	0.150 (0.357)	0.166 (0.372)	0.209 (0.407)	0.290 (0.454)
Science	0.128 (0.334)	0.152 (0.359)	0.110 (0.312)	0.093 (0.290)	0.151 (0.358)	0.137 (0.344)	0.178 (0.383)	0.162 (0.369)	0.156 (0.363)	0.145 (0.353)
Medicine	0.118 (0.322)	0.055 (0.229)	0.081 (0.273)	0.039 (0.195)	0.091 (0.288)	0.071 (0.257)	0.128 (0.334)	0.068 (0.252)	0.147 (0.354)	0.037 (0.189)
Sport	0.014 (0.117)	0.013 (0.115)	0.014 (0.119)	0.017 (0.129)	0.017 (0.129)	0.019 (0.136)	0.018 (0.135)	0.018 (0.131)	0.009 (0.094)	0.008 (0.089)

Notes: Survey weights are used. Standard deviations are in parentheses. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2009 and 2012 cohorts. The vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university). Source: DZHW.

each covariate may influence participation in study abroad programs in a different way depending on the student’s family backgrounds.¹¹ In order to relax this assumption, we decompose the social gap in access to study abroad programs using the method proposed by Fairlie (2005). Writing the logistic equation for participation in study abroad programs as $Y = F(X\hat{\beta})$, the decomposition of the difference in participation in study abroad programs between students from more and less advantaged backgrounds is given by:

$$\bar{Y}^{MA} - \bar{Y}^{LA} = \left[\sum_{i=1}^{N^{MA}} \frac{F(X_i^{MA} \hat{\beta}^{MA})}{N^{MA}} - \sum_{i=1}^{N^{LA}} \frac{F(X_i^{LA} \hat{\beta}^{MA})}{N^{LA}} \right] + \left[\sum_{i=1}^{N^{LA}} \frac{F(X_i^{LA} \hat{\beta}^{MA})}{N^{LA}} - \sum_{i=1}^{N^{LA}} \frac{F(X_i^{LA} \hat{\beta}^{LA})}{N^{LA}} \right] \quad (5)$$

where \bar{Y}^{MA} and \bar{Y}^{LA} represent the average probability of studying abroad among students from more advantaged backgrounds (MA) and those from less advantaged backgrounds (LA); N^{MA} and N^{LA} denote the sample size for each group; $\hat{\beta}^{MA}$ and $\hat{\beta}^{LA}$ represent the estimated coefficients from the logit regression for each group; and X_i^{MA} and X_i^{LA} represent observed characteristics in each group. The first component is the part of the social gap in access to study abroad programs that can be attributed to group differences in the distribution of characteristics of the explanatory variables. The second component shows the part of the gap that is due to differences in the estimated coefficients, but it also captures differences in unobservables. A common issue that arises in calculating the decomposition is that results vary depending on the choice of coefficients for the first component of the decomposition

¹¹ For instance, having attended vocational upper secondary schools is likely to present less of a barrier to studying abroad for students from more advantaged backgrounds relative to those from less advantaged backgrounds.

(Oaxaca, 1973). In the above decomposition we use $\hat{\beta}^{MA}$ in the first component. In an attempt to address this issue, termed “index number problem”, Neumark (1988) and Oaxaca and Ransom (1994) propose to weight the first component of the decomposition employing coefficient estimates from a pooled sample of both groups. Following this approach, the explained part of the social gap in access to study abroad programs can be written as:

$$\left[\sum_{i=1}^{N^{MA}} \frac{F(X_i^{MA} \hat{\beta}^*)}{N^{MA}} - \sum_{i=1}^{N^{LA}} \frac{F(X_i^{LA} \hat{\beta}^*)}{N^{LA}} \right] \quad (6)$$

where $\hat{\beta}^*$ represent coefficient estimates from a pooled logistic regression of students from more and less advantaged backgrounds. It is important to observe that our proxy for family background is not used as a covariate in the pooled regression.

In order to identify the separate contribution of an independent variable (or a set of covariates), the following procedure is used. Consider a simple model in which participation in study abroad programs is determined by two covariates X_1 and X_2 , and $N^{MA} = N^{LA}$, the contribution in the distribution of X_1 to the social gap in access to study abroad programs can be expressed as:

$$\frac{1}{N^{MA}} \sum_{i=1}^{N^{MA}} F(X_{1i}^{MA} \hat{\beta}_1^* + X_{2i}^{MA} \hat{\beta}_2^*) - F(X_{1i}^{LA} \hat{\beta}_1^* + X_{2i}^{MA} \hat{\beta}_2^*) \quad (7)$$

Similarly, the contribution of X_2 is equal to:

$$\frac{1}{N^{MA}} \sum_{i=1}^{N^{MA}} F(X_{1i}^{LA} \hat{\beta}_1^* + X_{2i}^{MA} \hat{\beta}_2^*) - F(X_{1i}^{LA} \hat{\beta}_1^* + X_{2i}^{LA} \hat{\beta}_2^*) \quad (8)$$

Basically, the contribution of each independent variable to the gap is equal to the change in the average predicted probability resulting from sequentially replacing MA characteristics with LA characteristics

Table 2c
Descriptive statistics- France.

	Cohort									
	2000		2003		2006		2010		2013	
	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds	Students from more advantaged backgrounds	Students from less advantaged backgrounds
Male	0.458 (0.498)	0.450 (0.498)	0.471 (0.499)	0.452 (0.498)	0.450 (0.498)	0.439 (0.496)	0.373 (0.484)	0.350 (0.477)	0.370 (0.483)	0.423 (0.494)
Vocational school	0.118 (0.323)	0.188 (0.390)	0.206 (0.404)	0.242 (0.428)	0.243 (0.429)	0.279 (0.449)	0.079 (0.271)	0.166 (0.372)	0.223 (0.416)	0.298 (0.457)
Age at upper secondary school completion										
< = 18	0.667 (0.471)	0.569 (0.495)	0.646 (0.478)	0.575 (0.494)	0.706 (0.456)	0.598 (0.490)	0.789 (0.408)	0.703 (0.457)	0.745 (0.436)	0.649 (0.477)
19	0.214 (0.410)	0.252 (0.434)	0.219 (0.414)	0.254 (0.435)	0.196 (0.397)	0.223 (0.416)	0.144 (0.351)	0.192 (0.394)	0.170 (0.376)	0.201 (0.401)
= > 20	0.119 (0.324)	0.179 (0.384)	0.134 (0.341)	0.171 (0.376)	0.098 (0.298)	0.180 (0.384)	0.065 (0.246)	0.104 (0.305)	0.085 (0.279)	0.150 (0.357)
Performance at the end of upper secondary school										
Poor	0.537 (0.499)	0.673 (0.469)	0.471 (0.499)	0.610 (0.488)	0.435 (0.496)	0.579 (0.494)	0.376 (0.485)	0.508 (0.500)	0.281 (0.450)	0.426 (0.495)
Good	0.294 (0.456)	0.237 (0.425)	0.324 (0.468)	0.267 (0.442)	0.280 (0.449)	0.287 (0.452)	0.319 (0.466)	0.322 (0.467)	0.266 (0.442)	0.316 (0.465)
Very good	0.134 (0.341)	0.076 (0.265)	0.140 (0.348)	0.102 (0.303)	0.179 (0.384)	0.107 (0.310)	0.217 (0.412)	0.135 (0.342)	0.292 (0.455)	0.171 (0.377)
Excellent	0.035 (0.184)	0.015 (0.122)	0.065 (0.246)	0.021 (0.143)	0.106 (0.308)	0.026 (0.161)	0.088 (0.283)	0.036 (0.186)	0.161 (0.368)	0.087 (0.281)
Subject studied at university										
Humanities,	0.588	0.605	0.599	0.602	0.593	0.579	0.612	0.688	0.716	0.707
Economics or Law	(0.492)	(0.489)	(0.490)	(0.490)	(0.491)	(0.494)	(0.487)	(0.463)	(0.451)	(0.455)
Engineering	0.193 (0.394)	0.202 (0.402)	0.178 (0.383)	0.207 (0.405)	0.174 (0.379)	0.174 (0.379)	0.065 (0.246)	0.092 (0.289)	0.074 (0.262)	0.103 (0.304)
Science	0.093 (0.290)	0.118 (0.323)	0.102 (0.303)	0.118 (0.322)	0.071 (0.256)	0.145 (0.352)	0.143 (0.350)	0.145 (0.353)	0.064 (0.245)	0.089 (0.284)
Medicine	0.097 (0.297)	0.030 (0.172)	0.091 (0.287)	0.036 (0.186)	0.126 (0.332)	0.062 (0.241)	0.075 (0.384)	0.146 (0.263)	0.146 (0.353)	0.096 (0.295)
Sport	0.030 (0.170)	0.045 (0.207)	0.035 (0.184)	0.038 (0.191)	0.037 (0.189)	0.042 (0.200)	0.016 (0.125)	0.021 (0.144)	0.000 (0.000)	0.005 (0.072)

Notes: Survey weights are used. Standard deviations are in parentheses. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2010 and 2013 cohorts. The vocational school qualification is obtained by students who have successfully completed *lycée professionnel* or *lycée technologique*. Source: OVE.

one variable or set of variables at the time. The computation of Eqs. (7) and (8) requires a one-to-one matching of cases between the two groups and, as they typically differ in size, a random subsample is drawn from the larger group of observations. The logistic regression assigns a predicted probability to each student in the smaller group and in the subsample drawn from the larger group. These probabilities are then ranked and matched in order, so that students with the highest predicted probability from the two groups are matched, and values from matched cases are used to assess compositional change. Given that the results depend on the randomly selected subsample of the larger group, this procedure is repeated multiple times (here, 1000), and the mean value across all repetitions is presented.

5. Results

5.1. Regression results

Tables 3a–3c show logistic regression results of the factors influencing participation in study abroad programs. The estimates, which are reported separately by cohort and country, are presented as average marginal effects. While uneven columns report estimates for the most parsimonious specification where only our proxy for family background is included, results for the full specification are depicted in even columns. Crude, unadjusted estimates of the effect of family background on participation in study abroad programs show time trends consistent with those depicted in Table 1, thereby supporting hypothesis H1.

In order to determine whether in each country changes in the association between socioeconomic background and participation in study abroad programs are statistically significant across cohorts, we pool data and estimate unconditional models including cohort dummies (reference is the first cohort) and interactions between these and our proxy for family background. Such regressions are estimated using a linear probability model since, as shown by Ai and Norton (2003), the interpretation of the marginal effect of an interaction term in nonlinear models can be problematic and in some cases it can lead to a misleading conclusion. These estimates, which are reported in Table 4, show that while in Italy changes in the social gap in study abroad program participation do not display any statistically significant variation across cohorts,¹² in Germany a statistically significant increase in inequality is observed from the 2006 cohort. In France, the difference in the probability of studying abroad between students from more and less advantaged backgrounds turns out to be statistically higher in the 2010 and 2013 cohorts relative to the 2000 cohort.

Additionally, even columns of Tables 3a–3c show that, even in the fully specified model, in none of our countries¹³ there is evidence of a

¹² However, an analysis based on more disaggregated social class categories shows that in Italy the social gap between students with at least one parent with a university degree and those with both their parents with lower secondary education or less increased over time (results are available from the author upon request).

¹³ One may note that, for Italy, our estimates of the average marginal effect of

Table 3a
Logistic regression for study abroad program participation- Italy.

	Cohort							
	2004		2007		2011		2015	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
More advantaged family background	0.022*** (0.006)	0.017*** (0.006)	0.026*** (0.005)	0.020*** (0.005)	0.026*** (0.007)	0.023*** (0.007)	0.028*** (0.008)	0.024*** (0.008)
Male		-0.002 (0.006)		0.007 (0.006)		-0.017** (0.007)		0.009 (0.008)
Vocational school		-0.024*** (0.006)		-0.018*** (0.005)		-0.031*** (0.007)		-0.034*** (0.007)
Age at upper secondary school completion (Reference is = > 20)								
< = 18		-0.020* (0.011)		0.017 (0.012)		-0.018 (0.015)		-0.004 (0.015)
19		-0.011 (0.007)		0.015* (0.009)		-0.003 (0.010)		-0.012 (0.019)
Performance at the end of upper secondary school (Reference is Poor)								
Good		0.015 (0.010)		0.002 (0.010)		0.005 (0.010)		0.028** (0.013)
Very good		0.029*** (0.010)		0.014 (0.010)		0.010 (0.010)		0.051*** (0.013)
Excellent		0.038*** (0.009)		0.030*** (0.009)		0.022** (0.009)		0.073*** (0.013)
Subject studied at university (Reference is Humanities, Economics or Law)								
Engineering		-0.048*** (0.011)		-0.063*** (0.010)		-0.042*** (0.011)		-0.031*** (0.010)
Science		-0.055*** (0.015)		-0.044*** (0.011)		-0.048*** (0.013)		-0.094*** (0.015)
Medicine		-0.065*** (0.016)		-0.045*** (0.011)		-0.058*** (0.012)		-0.114*** (0.018)
Sport		-0.034 (0.022)		-0.074** (0.030)		-0.098*** (0.037)		-0.038 (0.030)
N	8,360	8,360	12,574	12,574	11,803	11,803	10,706	10,706

Notes: Survey weights are used. Standard errors are in parentheses. While the 2004 and 2007 cohorts comprise third year students, fourth year students are included in the 2011 and 2015 cohorts. Coefficients are presented as average marginal effects so constant term is not shown. The vocational school qualification is obtained by students who have successfully completed *istituti professionali*, *istituti tecnici*, *istituti magistrali* or *istituti d'arte*. Source: ISTAT. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Table 3b
Logistic regression for study abroad program participation- Germany.

	Cohort									
	2000		2003		2006		2009		2012	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
More advantaged family background	-0.004 (0.011)	-0.005 (0.010)	0.008 (0.007)	0.005 (0.008)	0.026*** (0.008)	0.023*** (0.008)	0.049*** (0.017)	0.053*** (0.016)	0.051** (0.021)	0.055*** (0.021)
Male		0.009 (0.011)		0.001 (0.008)		-0.008 (0.009)		-0.010 (0.018)		0.008 (0.022)
Vocational school		-0.019 (0.019)		-0.015 (0.014)		-0.016 (0.015)		-0.066** (0.032)		-0.030 (0.032)
Age at upper secondary school completion (Reference is = > 20)										
< = 18		-0.014 (0.019)		-0.014 (0.014)		-0.008 (0.016)		-0.069** (0.035)		-0.019 (0.041)
19		-0.007 (0.011)		0.015** (0.008)		0.014* (0.009)		-0.008 (0.018)		0.004 (0.023)
Subject studied at university (Reference is Humanities, Economics or Law)										
Engineering		-0.053*** (0.019)		-0.027** (0.011)		-0.024** (0.011)		-0.182*** (0.036)		-0.144*** (0.035)
Science		-0.063** (0.025)		-0.014 (0.013)		-0.053*** (0.017)		-0.080*** (0.024)		-0.126*** (0.036)
Medicine		-0.081** (0.033)		-0.050** (0.021)		-0.060*** (0.023)		-0.142*** (0.037)		-0.152*** (0.042)
Sport		-0.032 (0.041)				-0.034 (0.011)		-0.155** (0.066)		
N	2,064	2,064	3,007	2,969	2,589	2,589	2,012	2,012	1,188	1,177

Notes: Survey weights are used. Standard errors are in parentheses. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2009 and 2012 cohorts. Coefficients are presented as average marginal effects so constant term is not shown. The vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university). Sport has been omitted in the specification whose estimates are reported in Columns (4) and (10) since this variable perfectly predicts lack of study abroad program participation. Source: DZHW. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Table 3c
Logistic regression for study abroad program participation- France.

	Cohort									
	2000		2003		2006		2010		2013	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
More advantaged family background	0.021** (0.008)	0.016** (0.008)	0.023** (0.010)	0.020** (0.010)	0.026*** (0.010)	0.019** (0.010)	0.062*** (0.013)	0.053*** (0.013)	0.070*** (0.015)	0.048*** (0.015)
Male		0.013 (0.009)		-0.013 (0.010)		-0.024** (0.010)		0.035** (0.014)		-0.018 (0.016)
Vocational school		0.030*** (0.012)		0.046*** (0.013)		0.010 (0.010)		-0.054* (0.028)		-0.041* (0.023)
Age at upper secondary school completion (Reference is = > 20)										
< = 18		0.018 (0.015)		0.000 (0.015)		-0.007 (0.017)		0.086** (0.037)		0.016 (0.036)
19		0.015 (0.016)		0.004 (0.016)		-0.007 (0.018)		0.051 (0.040)		0.010 (0.034)
Performance at the end of upper secondary school (Reference is Poor)										
Good		0.028*** (0.009)		0.020* (0.012)		0.027** (0.010)		0.028* (0.015)		0.040** (0.017)
Very good		0.040*** (0.012)		0.028* (0.015)		0.006 (0.012)		0.098*** (0.017)		0.088*** (0.020)
Excellent		0.062*** (0.015)		0.066*** (0.018)		0.077*** (0.017)		0.081*** (0.028)		0.142*** (0.025)
Subject studied at university (Reference is Humanities, Economics or Law)										
Engineering		-0.057*** (0.014)		-0.002 (0.014)		-0.001 (0.014)		-0.077*** (0.028)		-0.053* (0.031)
Science		-0.041*** (0.016)		-0.032* (0.017)		0.018 (0.013)		-0.109*** (0.021)		-0.090*** (0.030)
Medicine		-0.042* (0.023)		-0.050 (0.036)		-0.071** (0.031)		-0.168*** (0.029)		-0.170*** (0.027)
Sport		-0.043* (0.026)		-0.027 (0.036)		-0.087* (0.048)		0.008 (0.062)		
N	3,855	3,855	3,491	3,491	4,166	4,166	3,613	3,613	3,351	3,340

Notes: Survey weights are used. Standard errors are in parentheses. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2010 and 2013 cohorts. Coefficients are presented as average marginal effects so constant term is not shown. The vocational school qualification is obtained by students who have successfully completed *lycée professionnel* or *lycée technologique*. Sport has been omitted in the specification whose estimates are reported in Column (10) since this variable perfectly predicts lack of study abroad program participation. Source: OVE. *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

trend towards a reduction in social inequality.¹⁴ However, in line with expectations, adjusted estimates are generally lower than the crude ones.¹⁵ This means that the independent variables of our model explain some portions of the social gap in study abroad program participation.

Students studying Humanities, Economics or Law are generally found to have a higher probability of studying abroad than those studying other subjects. Interestingly, the former group of students are found to be systematically more likely to study abroad than medical students. As noted earlier, this is consistent with previous research indicating that students studying different subjects experience a different level of exposure to study abroad programs. It is also possible that

(footnote continued)

family background are practically unchanged when controlling for a dummy variable capturing whether a student is from one of the regions bordering a foreign country (i.e. Liguria, Lombardia, Piemonte, Valle d'Aosta, Veneto, Friuli Venezia Giulia and Trentino Alto Adige). The rationale for including this variable is that, since these students are more likely to speak fluently a second language, they may be more willing to participate in study abroad programs (estimates are available from the author upon request).

¹⁴ This finding is also confirmed when explanatory variables are added to the basic pooled models whose results are reported in Table 4. All the coefficients on the interactions that are statistically significant in Table 4 remain unchanged in terms of statistical significance in the fully specified pooled models (estimates are available from the author upon request).

¹⁵ Exceptions are the 2009 and 2012 cohorts in Germany. However, for comparability purposes, one should note that, when performance at the end of upper secondary school is excluded from the independent variables for Italy and France, adjusted estimates on our measure of family background turn out to be higher than the crude ones also in the 2003, 2006 and 2010 French cohorts (see Appendix 1).

students believe that the benefits of studying abroad in terms of future employability are higher in certain subjects relative to others. For instance, economics/business students may be particularly eager to study abroad as many of them would like to pursue an internationally oriented career, and they may perceive an international educational experience to be important for their future success (Petzold & Peter, 2015).

In Italy there is a consistently positive association between performing excellently in upper secondary school and participation in study abroad programs. It is also interesting to observe that the magnitude of this relationship is largest in the latest cohort.¹⁶ This may suggest that, given the growing number of students willing to study abroad, academic merit-based criteria have recently become more important in the selection of the best applicants. On the other hand, in none of the countries considered here age and gender appear to be systematically related to study abroad program participation.

In Italy, students who attended vocational upper secondary schools are consistently significantly less likely to study abroad. In Germany, the coefficient associated with vocational education has always a negative sign, but is statistically significant at conventional levels only in the 2009 cohort. In France, the association between vocational upper

¹⁶ We tested for statistical significance of coefficient changes across cohorts by running a fully specified pooled model where cohort dummies (reference is the 2004 cohort) as well as interactions between these and our indicators for performance at the end of upper secondary school are included. A linear probability model is used. The coefficient associated with the interaction between the 2015 cohort dummy and excellent performance at the end of upper secondary school turns out to be statistically significant at the 5 percent level (estimates are available from the author upon request).

Table 4
Pooled linear probability regression for study abroad program participation- Italy, France and Germany.

	Italy	France	Germany
Intercept	0.031*** (0.003)	0.040*** (0.005)	0.043*** (0.007)
More advantaged family background	0.025*** (0.007)	0.022** (0.009)	-0.004 (0.010)
Birth cohort	Reference is 2004	Reference is 2000	Reference is 2000
2003		0.004 (0.007)	-0.007 (0.009)
2006		0.002 (0.007)	-0.019** (0.009)
2007	0.003 (0.004)		
2009			0.072*** (0.013)
2010		0.077*** (0.009)	
2011	0.021*** (0.004)		
2012			0.060*** (0.015)
2013		0.069*** (0.010)	
2015	0.026*** (0.005)		
Birth cohort *more advantaged family background	Reference is 2004* more advantaged family background	Reference is 2000* more advantaged family background	Reference is 2000* more advantaged family background
2003* more advantaged family background		0.002 (0.014)	0.012 (0.013)
2006* more advantaged family background		0.005 (0.014)	0.029** (0.013)
2007* more advantaged family background	0.005 (0.010)		
2009* more advantaged family background			0.053*** (0.019)
2010* more advantaged family background		0.042** (0.017)	
2011* more advantaged family background	0.004 (0.011)		
2012* more advantaged family background			0.055** (0.023)
2013* more advantaged family background		0.050*** (0.018)	
2015* more advantaged family background	0.005 (0.011)		
N	43,443	18,476	10,860

Notes: Survey weights are used. Standard errors are in parentheses. Third year students are included in the 2004 and 2007 cohorts in Italy as well as in the 2000, 2003 and 2006 cohorts in both France and Germany. All the other cohorts comprise fourth year students. Sources: ISTAT (Italy), OVE (France) and DZHW (Germany). *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

secondary school and study abroad program participation varies across cohorts. While in the two most recent cohorts this relationship is negative (like in Italy and in Germany), it turns out to be positive in earlier cohorts.

Next, two additional sets of analyses are performed in an attempt to improve the comparability of the results across and within the countries. First, to get estimates for Italy and France similar to those for Germany reported in the even columns of Table 3b, we replicate the results shown in the even columns of Tables 3a and 3c but this time excluding performance at the end of upper secondary school from the independent variables of the model. The results, which are shown in Appendix 1, seem to point in the same direction of our previous findings. Second, to make the French and German samples comparable across all the cohorts, we re-estimate the basic pooled models including only third year students in both countries. The results indicate that, while a trend towards wider inequality in access to study abroad programs is still observed in Germany, this is no longer the case in France. As shown in Appendix 2, while in Germany the difference in the probability of studying abroad between students from more and less advantaged backgrounds continues to be statistically higher in the 2009 and 2012 cohorts relative to the 2000 cohort, in France none of the coefficients on the interactions are now

statistically significant.¹⁷ These findings would seem therefore to indicate that in France the magnitude of inequality varies across students from different years of study. To further confirm this conclusion, we (re)-estimate Eq. (2) for each cohort separately, consistently using third year students in the French and German samples. Looking at the most parsimonious specification for France, when comparing results shown at the top right of Appendix 3 with the corresponding estimates reported in columns 7 and 9 of Table 3c, one may note that the social gap in study abroad program participation in the 2010 and 2013 cohorts is considerably smaller among third year students relative to their fourth year peers. On the other hand, in Germany the crude estimate of the social gap in the 2009 cohort is practically the same across third and fourth year students, whereas in the 2012 cohort it is smaller, but still quite large (0.041) if third year instead of fourth year students are considered (see Appendix 3 vs. Table 3b).¹⁸

¹⁷ These results do not change if the fully specified pooled models are employed (estimates are available from the author upon request).

¹⁸ Similar conclusions hold also for the full specification without performance at the end of upper secondary school for France (see Appendix 3 vs. Appendix 1) and Germany (see Appendix 3 vs. Table 3b).

Finally, in order to check the robustness of our results on the variable of primary interest in this study, we replicate the estimates reported in Tables 3a–3c but this time using parental occupation as a proxy for family background (this information is, however, unavailable in the 2000 wave of the Germany survey). Students from more advantaged backgrounds are defined as those with at least one parent with a high-level occupation.¹⁹ These new estimates, which are shown in Appendix 4, support the proposition that the social gap in study abroad program participation has increased in Germany and France, while it showed a relatively stable pattern in Italy. These trends remain even after differences in individual characteristics between students from different socioeconomic status are accounted for.

5.2. Decomposition results

Tables 5a–5c show the findings of the decomposition analysis by family background based on the regression models presented in Tables 3a–3c, respectively. The separate contributions of the independent variables are shown.

In line with hypothesis H2, in Italy and in France performance in upper secondary school is found to consistently contribute to explain the social gap in study abroad program participation (in Tables 5a and 5c the percent explained by ‘Performance at the end of upper secondary school’ is always positive). This is especially true in France where the contribution estimates are always above 25 percent of the total gap—except for the 2010 cohort. As shown in Table 2c, the proportion of French students showing excellent performance in upper secondary school is significantly higher among students from more privileged backgrounds relative to those from less privileged backgrounds, giving the former an advantage in terms of study abroad program participation as evidenced by the estimates reported in Table 3c. Additionally, not only is such a difference positive, but it tends to increase over time.²⁰ This is likely to have been a driving force in the direction of increasing the social gap. Such conclusion is confirmed by looking at changes across cohorts in the coefficient associated with excellent performance in upper secondary school from the decomposition analysis (while Table 5c displays the decomposition results for the overall category of ‘Performance at the end of upper secondary school’, estimates associated with the different performances are available from the author upon request). Given that the 95 percent confidence interval in the 2013 cohort (0.0065-0.0191) does not overlap with the corresponding interval in the 2000 cohort (0.0006-0.0056), the change in the contribution of this variable appears to be statistically significant.

Decomposition results for Italy offer strong support for hypothesis H3. In this country, vocational upper secondary education turns out to be the most important factor accounting for the social disparity in study abroad program participation. Given that there is a statistically significant negative relationship between this factor and studying abroad (Tables 3a), the considerable imbalance in the proportion of students who attended vocational upper secondary schools between students from different family backgrounds (Table 2a) contributes the most to explaining the social gap in access to study abroad programs. Yet the lack of increase over time of the difference in participation in vocational education between students from less and more advantaged backgrounds in Italy could have prevented the gap from further rising. Results from the decomposition analysis confirm that in Italy the contribution of vocational upper secondary education does not show any statistically significant variation across cohorts. The 95 percent confidence intervals of the relevant coefficient overlap each other (0.0032-

¹⁹ High-level occupations include managers, directors, senior officials and professional occupations.

²⁰ Ichou and Vallet (2013) provide evidence of a wider social gap in terms of academic performance between French individuals born in 1951 and those born in 1984.

Table 5a
Fairlie decomposition results- Italy.

	Cohort			
	2004	2007	2011	2015
Social gap in study abroad participation	0.025	0.030	0.028	0.030
Total explained	0.005 (19.4%)	0.006 (19.5%)	0.003 (10.8%)	0.004 (13.6%)
Part explained by:				
-Male	-0.000 (-0.9%)	0.001 (2.6%)	-0.001 (-4.6%)	0.001 (2.3%)
-Vocational school	0.007 (27.9%)	0.005 (17.3%)	0.007 (26.4%)	0.007 (23.3%)
-Age	-0.002 (-6.2%)	0.000 (1.1%)	-0.001 (-4.4%)	0.000 (1.2%)
-Performance at the end of upper secondary school	0.002 (7.9%)	0.001 (2.8%)	0.000 (0.9%)	0.002 (8.3%)
-Subject studied at university	-0.002 (-9.3%)	-0.001 (-4.3%)	-0.002 (-7.5%)	-0.006 (-21.5%)

Notes: Survey weights are used. Percent contribution is shown in brackets. While the 2004 and 2007 cohorts comprise third year students, fourth year students are included in the 2011 and 2015 cohorts. The vocational school qualification is obtained by students who have successfully completed *istituti professionali, istituti tecnici, istituti magistrali or istituti d'arte*. Source: ISTAT.

Table 5b
Fairlie decomposition results- Germany.

	Cohort				
	2000	2003	2006	2009	2012
Social gap in study abroad participation	-0.004	0.008	0.025	0.049	0.051
Total explained	0.001 (-32.0%)	0.002 (29.7%)	0.002 (7.0%)	-0.003 (-5.4%)	-0.003 (-6.2%)
Part explained by:					
-Male	-0.000 (8.4%)	-0.000 (-0.1%)	-0.000 (-0.2%)	-0.000 (-0.5%)	-0.000 (-0.0%)
-Vocational school	-0.002 (-57.7%)	0.001 (13.5%)	0.001 (4.2%)	0.004 (7.9%)	0.002 (3.8%)
-Age	-0.001 (24.9%)	0.001 (15.5%)	0.001 (4.4%)	-0.001 (-2.1%)	-0.001 (-1.1%)
-Subject studied at university	-0.000 (-7.6%)	0.000 (0.8%)	-0.000 (-1.4%)	-0.005 (-10.7%)	-0.005 (-8.9%)

Notes: Survey weights are used. Percent contribution is shown in brackets. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2009 and 2012 cohorts. The vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university). Source: DZHW.

0.0105 in the 2004 cohort; 0.0019-0.0085 in the 2007 cohort; 0.0042-0.0107 in the 2011 cohort; and 0.0039-0.010 in the 2015 cohort).

Also in Germany vocational education helps to explain the social selectivity of studying abroad (except for the 2000 cohort), though to a lower extent compared to Italy.²¹ In France, by contrast, our third hypothesis is not corroborated because the contribution of vocational education is found to be inconsistent over time and quite small, especially in most recent cohorts.

Looking at the bottom row of Tables 5a–5c, one may note that the proportion of the social gap explained by ‘Subject studied at university’ is always negative (apart from the 2003 German cohort). This result

²¹ Decomposition results for Italy based on a model without performance at the end of upper secondary school (see Panel A of Appendix 5) would appear to confirm that the role played by vocational education in explaining changes in social inequality is more important in Italy than in Germany.

Table 5c
Fairlie decomposition results- France.

	Cohort				
	2000	2003	2006	2010	2013
Social gap in study abroad participation	0.022	0.024	0.027	0.064	0.072
Total explained	0.004	0.004	0.006	0.006	0.019
Part explained by:	(19.4%)	(11.5%)	(21.0%)	(12.8%)	(26.5%)
-Male	-0.000	0.000	-0.000	0.001	0.001
	(-0.4%)	(0.1%)	(-1.5%)	(1.3%)	(1.0%)
-Vocational school	-0.003	-0.003	-0.000	0.003	0.001
	(-11.4%)	(-10.9%)	(-0.4%)	(4.1%)	(1.9%)
-Age	0.001	-0.000	-0.000	0.003	0.000
	(6.4%)	(-0.8%)	(-2.9%)	(4.5%)	(0.4%)
-Performance at the end of upper secondary school	0.006	0.007	0.011	0.011	0.019
	(27.0%)	(29.8%)	(41.0%)	(17.4%)	(26.2%)
-Subject studied at university	-0.000	-0.002	-0.004	-0.007	-0.002
	(-2.2%)	(-6.7%)	(-15.2%)	(-14.5%)	(-3.0%)

Notes: Survey weights are used. Percent contribution is shown in brackets. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2010 and 2013 cohorts. The vocational school qualification is obtained by students who have successfully completed *lycée professionnel* or *lycée technologique*. Source: OVE.

shows that there is quite consistent support for the idea that subject studied at university acts to narrow the social gap (hypothesis H4). Despite this, however, the social gap did not actually decrease in any of the countries. This is because, in comparison with vocational education and performance in upper secondary education, the relative contribution of subject of study in explaining changes in the gap is more limited. In Italy, for instance, while subject of study systematically acted to decrease the gap, this was more than offset by vocational education that worked in the opposite direction.

As done in Section 5.1, to enhance the comparability of our estimates, we present the decomposition results for Italy and France based on a specification of the logit model without performance at the end of upper secondary school (Appendix 5). While, in line with expectations, the portion of the social gap explained by the model decreases in both countries, the reduction is especially large in France. Appendix 6 reports the decomposition results for France and Germany when only third year students are consistently selected across all the cohorts. The findings confirm the inability of the model to account for a large part of the social gap. This result is in line with the conclusions of Lörz et al. (2016) who argue that several unobserved or difficult-to-measure factors influence the intention to study abroad. Interestingly, they claim that these factors reach back students' social origin as they are related to the cultural opportunities people had while growing up.

6. Conclusions

To the best of our knowledge, this is the first paper looking at the evolution of the crude and adjusted gap in access to study abroad programs between students from more and less advantaged backgrounds in a cross-country setting. We focus on Italy, Germany and France in the period between the 2000s and mid-2010s. A decomposition method is employed to single out and quantify the factors that contributed to the gap and study how their importance changed over time. Four main results emerge from the empirical analysis.

First, not only is there no trend toward declining social inequalities in study abroad programs in any of the countries considered here, but there is consistent evidence suggesting that the social gap has increased

in Germany. Additionally, these patterns tend to remain also after controlling for differences in several individual observed characteristics that are thought to affect participation in study abroad programs. This finding is significant as it indicates that even if differences in these characteristics were removed over time, the social disparity in study abroad program participation is likely to persist and even grow.

Second, while demographic traits like gender and age do not appear to have contributed to explaining the social gap in access to study abroad programs, earlier educational trajectories and performance are of great importance in two countries. More precisely, differences in performance in upper secondary school and in participation in upper secondary vocational education between students from more and less advantaged backgrounds account for a significant portion of this gap in France and Italy, respectively. In France, the widening over time of the difference in the proportion of students showing excellent performance at upper secondary school between the two socioeconomic groups worked in the direction of increasing the social gap. In Italy, by contrast, since the difference in the proportion of students who attended upper secondary vocational schools between students from more and less advantaged backgrounds has not grown over time, this kept the gap from further increasing.

Third, there is quite consistent evidence that subject of study at university acted to narrow the social gap in study abroad program participation. However, this factor did not prevent the gap from persisting or widening given that it plays a less important role than that of vocational education and/or upper secondary school performance.

Fourth, there is a large proportion of the gap that cannot be explained by differences in student characteristics included in the model. This suggests that other characteristics (both observable and unobservable) play an important role in accounting for the social disparity in access to study abroad programs. The inability of establishing what is driving the unexplained component of the gap is a shortcoming of the paper, but our data clearly reaches limits here. Future research should cast more light on this issue, but there is a need for richer cross-country data.

Finally, one should note that the data come from three national surveys differing in coverage and content. This, unfortunately, limited the comparability of the results. However, additional analyses were performed in an attempt to address some of the factors that limited the comparability. These analyses, together with supplementary checks, show that our results are robust, even though in France there seem to be some differences in the extent of social inequality across students from different years of study. As far as the main conclusion of the paper is concerned, all the estimates consistently indicate that the goal of reducing social selectivity of studying abroad is far from being achieved in all the three countries examined here. Therefore, more efforts should be put in place to alleviate the gap. It would be good to increase vocational students' exposure to international perspectives. In this sense, possible measure may, for instance, include: providing more information on the benefits related to studying abroad to vocational students as well as offering more foreign language courses in vocational schools. On the other hand, although effective, reducing the social difference in upper secondary school performance may turn out to be a costly and difficult way to proceed, as noted by Jerrim et al. (2016).

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Declaration of Competing Interest

The author has no conflict of interest to declare.

Appendix 1 Logistic regression for study abroad program participation (full specification without performance at the end of upper secondary school)- Italy and France

Cohorts					
Italy					
	2004	2007	2011	2015	
More advantaged backgrounds	0.019*** (0.006)	0.021*** (0.005)	0.023*** (0.007)	0.026*** (0.008)	
France					
	2000	2003	2006	2010	2013
More advantaged backgrounds	0.022*** (0.008)	0.027*** (0.010)	0.030*** (0.010)	0.063*** (0.013)	0.066*** (0.015)

Notes: Survey weights are used. Third year students are included in the 2004 and 2007 cohorts in Italy and in the 2000, 2003 and 2006 cohorts in France. All the other cohorts comprise fourth year students. Coefficients are presented as average marginal effects. Standard errors are in parentheses. The following independent variables are included: gender, age at upper secondary school completion, subject studied at university and vocational upper secondary education (In Italy vocational school qualification is obtained by students who have successfully completed *istituti professionali, istituti tecnici, istituti magistrali* or *istituti d'arte*, whereas in France upon successful completion of *lycée professionnel* or *lycée technologique*). Sources: ISTAT (Italy) and OVE (France). *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Appendix 2 Pooled linear probability regression for study abroad program participation- France and Germany (third year students only)

	France	Germany
Intercept	0.040*** (0.005)	0.043*** (0.007)
More advantaged family background	0.022** (0.009)	-0.004 (0.010)
Birth cohort	Reference is 2000	Reference is 2000
2003	0.004 (0.007)	-0.007 (0.009)
2006	0.002 (0.007)	-0.019** (0.009)
2009		0.015 (0.010)
2010	0.024*** (0.007)	
2012		0.027*** (0.011)
2013	0.034*** (0.007)	
Birth cohort *more advantaged family background	Reference is 2000* more advantaged family background	Reference is 2000* more advantaged family background
2003* more advantaged family background	0.002 (0.014)	0.012 (0.013)
2006* more advantaged family background	0.005 (0.014)	0.029** (0.013)
2009* more advantaged family background		0.054*** (0.015)
2010* more advantaged family background	0.015 (0.013)	
2012* more advantaged family background		0.045*** (0.016)
2013* more advantaged family background	0.010 (0.015)	
N	20,091	12,969

Notes: Survey weights are used. Standard errors are in parentheses. Sources: OVE (France) and DZHW (Germany). *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Appendix 3 Logistic regression for study abroad program participation (third year students only)- France and Germany

Cohorts					
France					
	2000	2003	2006	2010	2013
<i>Most parsimonious specification</i>					
More advantaged backgrounds	0.021** (0.008)	0.023** (0.010)	0.026*** (0.010)	0.036*** (0.009)	0.031*** (0.012)

<i>Full specification (without performance at the end of upper secondary school)</i>					
More advantaged backgrounds	0.022*** (0.008)	0.027*** (0.010)	0.030*** (0.010)	0.031*** (0.009)	0.031*** (0.012)
Germany					
	2000	2003	2006	2009	2012
<i>Most parsimonious specification</i>					
More advantaged backgrounds	-0.004 (0.011)	0.008 (0.007)	0.026*** (0.008)	0.052*** (0.012)	0.041*** (0.012)
<i>Full specification (without performance at the end of upper secondary school)</i>					
More advantaged backgrounds	-0.005 (0.010)	0.005 (0.008)	0.023*** (0.008)	0.054*** (0.012)	0.040*** (0.012)

Notes: Survey weights are used. Coefficients are presented as average marginal effects. Standard errors are in parentheses. In the full specification (without performance at the end of upper secondary school) the following independent variables are included: gender, age at upper secondary school completion, subject studied at university and vocational upper secondary education (In France, vocational school qualification is obtained by students who have successfully completed *lycée professionnel* or *lycée technologique*. In Germany, vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university)). Sources: OVE (France) and DZHW (Germany). *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Appendix 4 Logistic regression for study abroad program participation using an alternative measure for family background - Italy, France and Germany

Cohorts					
Italy					
		2004	2007	2011	2015
<i>Most parsimonious specification</i>					
At least one parent with a high-level occupation		0.023*** (0.006)	0.026*** (0.005)	0.018*** (0.006)	0.026*** (0.007)
(N)		8,354	12,561	12,159	11,581
<i>Full specification</i>					
At least one parent with a high-level occupation		0.018*** (0.005)	0.019*** (0.005)	0.014** (0.006)	0.022*** (0.007)
(N)		8,354	12,561	12,159	11,581
France					
	2000	2003	2006	2010	2013
<i>Most parsimonious specification</i>					
At least one parent with a high-level occupation	0.015* (0.008)	0.034*** (0.010)	0.016* (0.010)	0.052*** (0.013)	0.048*** (0.015)
(N)	4,059	3,737	4,404	3,718	3,261
<i>Full specification</i>					
At least one parent with a high-level occupation	0.011 (0.008)	0.031*** (0.010)	0.014 (0.010)	0.043*** (0.013)	0.038*** (0.015)
(N)	4,059	3,737	4,404	3,718	3,248
Germany					
	2000	2003	2006	2009	2012
<i>Most parsimonious specification</i>					
At least one parent with a high-level occupation		-0.001 (0.013)	0.026*** (0.008)	0.023 (0.016)	0.028 (0.021)
(N)		3,220	2,754	2,045	1,209
<i>Full specification</i>					
At least one parent with a high-level occupation		0.003 (0.013)	0.024*** (0.008)	0.023 (0.016)	0.033 (0.021)
(N)		3,181	2,754	2,045	1,198

Notes: Survey weights are used. Third year students are included in the 2004 and 2007 cohorts in Italy as well as in the 2000, 2003 and 2006 cohorts in both France and Germany. All the other cohorts comprise fourth year students. Coefficients are presented as average marginal effects. Standard errors are in parentheses. In the full specification, the following independent variables are included: gender, age at upper secondary school completion, subject studied at university, vocational upper secondary education (In Italy vocational school qualification is obtained by students who have successfully completed *istituti professionali*, *istituti tecnici*, *istituti magistrali* or *istituti d'arte*, whereas in France upon successful completion of *lycée professionnel* or *lycée technologique*. In Germany, vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university)) and performance at the end of upper secondary school (with the exception of Germany). Results are not displayed for the 2000 German cohort as information on parental occupation is missing. Sources: ISTAT (Italy), OVE (France) and DZHW (Germany). *** denotes statistical significance at 1%, ** denotes statistical significance at 5%, * denotes statistical significance at 10%.

Appendix 5 Fairlie decomposition results (without performance at the end of upper secondary school)- Italy and France

	Cohort			
	2004	2007	2011	2015
Social gap in study abroad participation	0.025	0.030	0.028	0.030
Total explained	0.005	0.005	0.003	0.002
<i>Part explained by:</i>	(10.3%)	(15.2%)	(9.4%)	(7.0%)
-Male	-0.001	0.000	-0.001	0.000
	(-2.5%)	(1.1%)	(-5.2%)	(0.5%)
-Vocational school	0.006	0.005	0.007	0.006
	(23.4%)	(15.3%)	(25.3%)	(18.8%)
-Age	-0.001	0.001	-0.001	0.002
	(-3.0%)	(2.0%)	(-3.5%)	(4.1%)
-Subject studied at university	-0.002	-0.001	-0.002	-0.005
	(-7.6%)	(-3.2%)	(-7.2%)	(-16.4%)

Notes: Survey weights are used. Percent contribution is shown in brackets. While the 2004 and 2007 cohorts comprise third year students, fourth year students are included in the 2011 and 2015 cohorts. The vocational school qualification is obtained by students who have successfully completed *istituti professionali, istituti tecnici, istituti magistrali* or *istituti d'arte*. Source: ISTAT.

	Cohort				
	2000	2003	2006	2010	2013
Social gap in study abroad participation	0.022	0.024	0.027	0.064	0.072
Total explained	-0.001	-0.004	-0.003	-0.001	0.002
<i>Part explained by:</i>	(-2.6%)	(-15.5%)	(-12.1%)	(-1.0%)	(3.2%)
-Male	0.000	-0.000	-0.000	0.001	0.001
	(0.2%)	(-1.7%)	(-1.7%)	(1.4%)	(1.6%)
-Vocational school	-0.003	-0.002	-0.001	0.002	0.001
	(-13.5%)	(-9.1%)	(-3.0%)	(3.6%)	(0.9%)
-Age	0.002	0.000	0.001	0.004	0.002
	(7.9%)	(0.5%)	(1.9%)	(6.1%)	(2.9%)
-Subject studied at university	0.001	-0.001	-0.002	-0.008	-0.002
	(2.8%)	(-5.2%)	(-9.3%)	(-12.1%)	(-2.2%)

Notes: Survey weights are used. Percent contribution is shown in brackets. While the 2000, 2003 and 2006 cohorts comprise third year students, fourth year students are included in the 2010 and 2013 cohorts. The vocational school qualification is obtained by students who have successfully completed *lycée professionnel* or *lycée technologique*. Source: OVE.

Appendix 6 Fairlie decomposition results (third year students only)- France and Germany

Cohorts					
France					
	2000	2003	2006	2010	2013
Social gap in study abroad participation	0.022	0.024	0.027	0.037	0.032
<i>Full specification (without performance at the end of upper secondary school)</i>					
Total explained	-0.001	-0.004	-0.003	0.004	-0.000
	(-2.6%)	(-15.5%)	(-12.1%)	(10.1%)	(-0.4%)
Germany					
	2000	2003	2006	2009	2012
Social gap in study abroad participation	-0.004	0.008	0.025	0.050	0.042
<i>Full specification (without performance at the end of upper secondary school)</i>					
Total explained	0.001	0.002	0.002	-0.001	0.000
	(-32.0%)	(29.7%)	(7.0%)	(-1.9%)	(0.9%)

Notes: Survey weights are used. Percent contribution is shown in brackets. In the full specification (without performance at the end of upper secondary school) the following independent variables are included: gender, age at upper secondary school completion, subject studied at university and vocational upper secondary education (In Italy vocational school qualification is obtained by students who have successfully completed *istituti professionali, istituti tecnici, istituti magistrali* or *istituti d'arte*, whereas in France upon successful completion of *lycée professionnel* or *lycée technologique*. In Germany, vocational school qualification is achieved by students who have a *Fachhochschulreife* (a qualification to enter a university of applied sciences) or those who have a *Fachgebundene Hochschulreife* (a qualification to enter a university of applied sciences or a specialist university)). Sources: OVE (France) and DZHW (Germany).

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