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What Explains Socioeconomic Inequality in Study Abroad Participation? New Evidence from Large-Scale Administrative Data

Working Paper Series 2024/01

What Explains Socioeconomic Inequality in Study Abroad Participation? New Evidence from Large-Scale Administrative Data

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Abstract: While studying abroad as part of a degree programme is increasingly common, there are widespread concerns around socioeconomic inequalities in participation. Using large-scale high-quality administrative data from Ireland, we show that students from affluent backgrounds are 1.5 times (46%) more likely to study abroad than non-affluent students. Applying a Gelbach decomposition, we find that prior academic performance and field of study explain most of the observed difference. We also show, for the first time, considerable heterogeneity in the relationship between participation and socioeconomic status by field of study and that inequalities are much greater for high-performing students.

Keywords: Study abroad; International student mobility; Higher education; Socioeconomic inequality; Decomposition.

1. Introduction

The number of students studying abroad for a semester or more as part of their degree programme has increased considerably across the world in recent decades (Di Pietro 2019; OECD 2020). This trend coincides with a growing literature highlighting an array of benefits associated with international student mobility (ISM)[1]. For example, empirical evidence shows that studying abroad can lead to improved language proficiency (Magnan and Back 2007; Sorrenti 2017; Cullinan, Flannery, and Palcic 2022), better graduation grades (Granato et al. 2024), increased personal development skills (Zimmermann and Neyer 2013), as well as enhanced labour market outcomes (Mitchell 2012; Di Pietro 2015; Jacob, Kühhirt, and Rodrigues 2019; d'Hombres and Schnepf 2021). In addition, ERASMUS+, the European Union's flagship mobility programme, has been shown to enhance the civic experience of mobile students, promoting greater intercultural awareness and interest in the European Union project as a whole (Mitchell 2012). As a result, there has been a large increase in the promotion of mobility opportunities within the EU, evidenced by the doubling of the overall budget to €26.2bn in its latest programme, which runs from 2021-2027 (European Commission 2021).

Nonetheless, despite rising numbers availing of study abroad opportunities, there are concerns relating to inequalities in participation. For example, previous research has shown that ISM is socially selective and that lower socioeconomic status (SES) students are consistently underrepresented in exchange programmes (Netz et al. 2021; Aerts and Van Mol 2023). Naturally, the degree to which mobilities are concentrated among high SES students raises important questions, especially given the numerous benefits of participation. However, understanding what drives differences in mobility rates across SES groups remains relatively under-researched, which may in turn hinder effective policies aimed at addressing the issue.

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[1] ISM is defined as students leaving their country of residence for a period of higher education abroad or to pursue a related activity, such as a foreign work placement or study tour. In this paper we focus on short-term study mobilities during a student's undergraduate studies e.g. an Erasmus study abroad placement.

There is some empirical evidence that shows that prior academic performance, subject choice, as well as cost and benefit considerations, play a role in explaining the social gap in mobility rates in Germany, Italy, and France (Lörz, Netz, and Quast 2016; Di Pietro 2020). In addition, attending certain types of higher education institutions (HEIs) may also explain why high SES students more commonly engage in exchange programmes in the UK and other countries (Schnepf and Colagrossi 2020; Schnepf, Bastianelli, and Blasko 2022). However, Di Pietro (2020) highlights that the characteristics that help explain the social gap can vary significantly across countries. This implies that a *one size fits all* policy approach aimed at reducing social inequalities in study abroad participation across countries may have differing degrees of effectiveness and that further country-specific research on the topic is required.

Within this context, this paper employs regression and decomposition techniques to examine the relationship between short-term study abroad mobilities and SES. It does so using high-quality administrative data on all third year undergraduate students in Ireland over the period 2018/19–2020/21, which allows us to quantify the level and consider the drivers of socioeconomic inequalities in participation. In contrast to many previous studies in this area that have tended to rely on self-reported survey data with relatively small sample sizes and subjective measures of SES, our dataset includes observations on 64,230 students and contains an objective, spatially-based measure of SES that is based on the home address of each student. The richness of our administrative data allows us to control for a wide range of student- and HEI-level characteristics, while the large sample size enables us to comprehensively analyse heterogeneity in the relationship between study abroad and SES across a range of dimensions. Indeed, while previous studies have shown that social inequalities exist in study abroad participation on average, ours is the first study to consider where inequalities are most acute, representing an important and novel contribution to the literature.

In terms of findings, our analysis shows an unadjusted social gap in mobility rates between affluent and non-affluent students of 4.1 percentage points. In the context of an overall average mobility rate of 9.5%, this equates to affluent students being 1.5 times (46%) more likely to participate in study abroad programmes. We consider and present evidence relating to three broad explanations for this socioeconomic inequality. First, we analyse the importance of academic ability, given that achieving some designated/minimum grade is generally a requirement to participate in mobility programmes. Using academic performance in secondary school as a proxy[2], our decomposition analysis finds that academic ability explains 37.8% of the gap in participation rates overall. Second, we consider the importance of where and what an individual studies. Students from more affluent backgrounds are more likely to attend more selective HEIs (Flannery and Cullinan 2014), where student exchange programmes are more common, while they are also more likely to study highly sought after programs (Anders 2012; Delaney and Devereux 2020). Overall we find that field of study explains one-sixth of the social gap but that HEI type is not an important driver. Third, inequalities in study abroad participation may be linked to the type of secondary school a student attended if, for example, students attending fee-paying schools are more likely to have greater exposure to international travel, through school trips abroad. We consider the importance of attending a fee-paying school for the social gap and find it explains 11.5% of the difference.

In our heterogeneity analysis, we find that inequalities vary considerably by field of study. For example, inequalities are particularly acute in Business, Administration, and Law courses, more than double that in Social Sciences, Journalism and Information courses. Interestingly, we also find evidence that low SES students in Health and Welfare courses are twice as likely to study abroad compared to affluent students. Identifying where inequalities are most

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[2] Previous research has shown a strong social gradient in academic performance in secondary school in Ireland (Cullinan, Denny, and Flannery 2021).

pronounced provides policy makers and HEIs with useful evidence on where policies can and should be targeted to reduce social inequalities in study abroad participation. We also find that inequalities are most pronounced for high-ability students, implying that other barriers prevent such students from non-affluent backgrounds engaging with mobility opportunities. Finally, we observe no socioeconomic gradient in study abroad participation among language students. Despite anecdotal evidence that low SES students are more likely to opt out of mandatory study abroad programmes, our results find no such evidence. In fact, our findings imply that courses with a mandatory study abroad component may reduce social inequalities in study abroad participation. Thus, overall, our paper makes a number of important contributions to the existing international literature and also provides unique evidence in the Irish context.

The structure of the remainder of the paper is as follows: Section 2 provides a review of the relevant literature, while Section 3 describes the Irish higher education system and provides information on study abroad participation in Ireland. Section 4 describes the data and empirical approach, Section 5 presents our results, while Section 6 concludes and discusses the implications of our findings.

2. Literature

It is well documented that study abroad participation is socially selective, with students from high SES backgrounds more likely to study abroad for a semester or more (Wiers-Jenssen 2011; Netz et al. 2021; Aerts and Van Mol 2023). This pattern has been observed across many regions, including several EU countries (Hauschildt et al. 2015), the UK (Schnepf and Colagrossi 2020), and the US (Salisbury et al. 2009). In addition, high SES students are also more likely to select into more exclusive types of mobility programmes, stay abroad for longer, and avail of study abroad scholarships (Netz and Finger 2016).

Theories of rational choice and cultural reproduction can be used to conceptualise the issue of social selectivity in ISM. Under the rational choice framework (Breen and Goldthorpe 1997; Boudon 1974), individuals decide to study abroad only if the expected benefits outweigh the costs. As the relative costs can be higher for low SES students, the decision can be different across social groups. Moreover, when assessing the potential benefits of studying abroad, the probability of actually achieving these benefits is also considered, which are a function of a student's prior academic performance (Netz and Finger 2016). Indeed, empirical applications of rational choice theory show that underprivileged students display higher costs sensitivities and lower benefit expectations when considering the possibility of studying abroad (Lörz, Netz, and Quast 2016).

Cultural reproduction theory, on the other hand, posits that educational success is based largely on an individual's habitus (i.e., early socialisation) (Bourdieu 1973). As high SES students' parents generally have higher levels of education, they are more adept to conform with the implicit rules that govern success within higher education (Bourdieu and Passeron 1990). In this context, low SES students may be less equipped to follow the rules of the 'education game', which in turn may negate the likelihood of studying abroad, where new languages and cultures can further exacerbate educational challenges (Netz and Finger 2016). Endowments of different forms of capital may also affect a student's decision to study abroad. Bourdieu (1986) describes three forms of capital that determine educational success: *economic*, *social*, and *cultural* capital. Economic capital refers to the financial resources available to a student (or their parents). The latest data available for the EU show that approximately half of all mobile students relied on private funding to support their study abroad, the majority of which (30%) was sourced from parents or family (Gwosc et al. 2021). Importantly, students with parents with a higher education background (high SES) are more easily able to utilise supports from their family to support their mobility than low SES students (Hauschildt 2015). Social capital

refers to the network of contacts that can support and provide advice to students about studying abroad. For example, students with parents that have international experience are more likely to engage in ISM, which typically are students from high SES backgrounds (Van Mol and Timmerman 2014). Finally, cultural capital relates to prior international experience or understanding of different cultures before entering higher education, which may encourage study abroad later in life. This can occur through family holidays abroad during childhood (Brooks and Waters 2010), as well as learning a foreign language outside of school (Finger 2011).

Despite several studies showing that study abroad is social selective, empirical evidence explaining the underlying causes of these social inequalities using quantitative methods remains sparse. Indeed, only a few studies have sought to explicitly understand the relationship between study abroad participation and SES. One example is Lörz, Netz and Quast (2016), which uses data from the German School Leaver Survey and shows that students from high SES backgrounds display a greater desire to study abroad. In line with the theory of rational choice, the paper finds that underprivileged students are less likely to study abroad due to higher costs sensitivities and lower benefit expectations attributed to a stay abroad. Moreover, lower prior academic performance amongst low SES students also helps explain the observed social gap observed in mobility aspirations. An important limitation, however, is that their data captures only information on a student's intention to study abroad, and not realised mobilities.

Di Pietro (2020) analyses social inequalities in study abroad participation across 3 countries: France, Germany, and Italy. Cross-sectional surveys within each country are analysed, which cover the period between the mid-2000s through to the mid-2010s. It finds that the social gap in mobility rates across SES groups has not decreased across any of the countries over time, and that inequalities actually widened in Germany. Using decomposition techniques, it shows that differences in prior academic performance across SES groups explains a significant share

of the social gap, while selection into specific fields of study is also an important determinant of social disparities in study abroad. Interestingly, a large proportion of the social gap remained unexplained, implying that other factors – beyond the student-level characteristics included in the models – may drive social inequalities in study abroad participation.

Schnepf and Colagorassi (2020) argue that the decision to study abroad (or not) cannot sufficiently be explained by individual-level factors alone. Instead, selection into certain universities plays a crucial role in terms of understanding why disadvantaged students have lower participation rates in mobility schemes. Using administrative graduate data in the UK, they find that social segregation into certain universities explains (in part at least) the unequal uptake of mobility opportunities amongst low SES students, while selection into certain fields of study also plays a role. In a more recent study, Schnepf, Bastianelli and Blasko (2022) extended this analysis to include three additional countries – Hungary, Italy, and Germany. University-level effects were found to be important in explaining social differences in ISM within the UK and Hungary.

In summary, while there is extensive literature showing that study abroad is a socially selective process, the mechanisms through which inequalities exist remain relatively under-researched. In addition, while the above-mentioned studies provide useful insights, none use an objective measure of SES. Furthermore, with only a couple of exceptions, the use of student-level administrative data in this area is rare, while there has been no research to date that focuses on where inequalities in study abroad participation are most pronounced. Our paper addresses these gaps and also provides the first comprehensive assessment of the relationship between study abroad participation and SES for Ireland.

3. Context

3.1 Higher education in Ireland

Publicly-funded HEIs in Ireland currently comprise a mix of universities, technological universities (TUs), institutes of technology (ITs), and other (mainly private) colleges. Importantly, during the period we analyse (2018–2021), the higher education landscape in Ireland underwent a period of considerable change, with several ITs amalgamating to form larger TUs[3]. Consequently, the university sector in our analysis includes the seven 'traditional' universities, as well as the recently formed Technological University of Dublin[4]. In the academic year 2018/19, full-time enrolments totalled 185,475 students, the vast majority of which were in undergraduate programmes (160,620). In the same year, two-thirds of all full-time undergraduate students attended a university. In Ireland, university students are more likely to study honours bachelor degrees (equivalent to a level 8 degree of the National Framework for Qualifications), while ordinary degrees and certificates (level 6 and 7) are more common in TUs and ITs. The latter also offer a wider range of part-time and flexible courses, with a relatively larger proportion of mature and disadvantaged students enrolled. In general, universities tend to be perceived as more prestigious than other third level institutions and also provide a wider array of postgraduate opportunities – see Cullinan and Flannery (2017) for more information on the Irish higher education system.

Entry into higher education depends largely on performance in a set of high-stakes exams at the end of upper secondary school: the Leaving Certificate examinations. These take place over a two-week period when students are typically between 17-19 years of age. Grades are converted into a points score commonly known as Central Applications Office (CAO) points,

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[3] For more information on the establishment of technological universities in Ireland, see https://hea.ie/policy/he-reform/technological-universities/.
[4] The seven traditional universities are Dublin City University, Maynooth University, Trinity College Dublin, University College Cork, University College Dublin, University of Galway, and University of Limerick. For a detailed list of all HEIs in Ireland, see Appendix Table A1.

with the number of CAO points awarded based on the 6 best subject-grades achieved in the examinations. Higher points are awarded for honours-level subjects than for ordinary-level subjects, while the maximum number of CAO points attainable is 625[5]. Students rank their preferred higher education course(s) before receiving their results and are able to select up to a maximum of ten honours-level courses (higher degrees) and ten lower-level courses (ordinary degrees and certificates). The number of points required to secure a place will depend on the number of (first-choice) applicants and the number of places available on each course. As courses are generally oversubscribed, a minimum points threshold exists, meaning that entry is based on a competitive system. Performance in upper secondary school therefore plays a crucial role in not only determining if a student transitions to higher education, but also where and what they study.

Third level education in Ireland is predominately funded by the State, meaning no fees exist for undergraduate students enrolled in publicly-funded HEIs. A separate student contribution is required however, which is paid directly to the HEI where the student is enrolled, and is used to cover the costs of student services and examinations. The student contribution was introduced in 2007 due to a shortfall in Exchequer funding stemming from the financial crisis and rising student numbers. The amount payable under the contribution rose incrementally in subsequent years and remained at €3,000 from 2015 to 2023, when it was reduced by €1,000[6]. It is important to point out that the contribution is a set amount across all undergraduate programmes within and across all publicly-funded HEIs. However, a wide-range of supports are available to disadvantaged students, including reduced or fully subsidised student contributions and maintenance grants.

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[5] Points for all subjects range from 0-100, with the exception of mathematics. To encourage more students to sit higher-level mathematics, an additional 25 points are awarded to students sitting the higher-level paper who achieve a minimum of a H6 (40%) grade in their exam.
[6] See https://www.gov.ie/en/press-release/c94f7-minister-harris-announces-details-of-113-million-cost-of-education-package-for-university-students/

3.2 Student mobility in Ireland

The number of outward study mobilities in Ireland reached almost 4,000 in 2019/20, an increase of 50% since 2016/17 (HEA 2022a).[7] The vast majority of outward mobilities took place under the ERASMUS+ programme, accounting for almost 80% of all short study trips abroad. Ireland can be considered a net exporter when it comes to student mobility with more students travelling to Ireland from abroad to study for a semester or more. In 2019, for example, almost twice as many incoming students travelled to Ireland under the ERASMUS+ programme compared to the number of students enrolled in Irish HEIs travelling to other EU HEIs (European Commission 2020).

According to the latest Eurostudent survey, 4% of students in Ireland have studied abroad. However, 23% of those who have not already done so say that they are either currently preparing for an exchange trip (5%) or are intending to make a trip abroad as part of their degree at some point in the future, despite not having arrangements in place (18%) (Erskine and Harmon 2023). Taken within the wider European context, the share of Irish students that express no intention of enrolling in a study abroad programme (74%) is slightly higher than the EU average (68%).

Ireland's national strategy for higher education aims to widen overall participation in outward student mobilities (HEA 2011) with a particular emphasis on supporting outward mobilities amongst disadvantaged students (Department of Education and Skills 2016). However, research by Finn and Darmody (2017) show that socioeconomic status and the type of HEI attended matters for study abroad participation in Ireland. Using data from the Eurostudent V survey, they showed that students enrolled outside the university sector were significantly more

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[7] These reflect all SRS recorded mobilities across the entire student population, including students enrolled in undergraduate and postgraduate programmes, full-time and part-time students and Irish and non-Irish domiciled students.

likely to be 'stayers' (i.e. students with no intention of studying abroad). Moreover, students from low SES backgrounds were also less likely to engage in study abroad.

Data from the most recent wave of the Eurostudent survey show that the additional financial burden associated with studying abroad poses the largest obstacle for Irish students considering doing so, while loss of a paid job and insufficient third language skills are also cited as barriers (Erskine and Harmon 2023). Putting these barriers in an international context, additional financial burdens were considered an obstacle for 80% of all non-mobile Irish students in Ireland, which was the highest share of any EU country. Additionally, the share of students that regarded insufficient language skills as an obstacle to studying abroad was 49% in Ireland, 20 percentage points above the EU average (29%) (Hauschildt et al. 2015).

Until 2021, students from low SES backgrounds in receipt of maintenance grant funding were also entitled to an additional monthly top-up grant if they enrolled on an ERASMUS+ programme. This additional funding, the Social Inclusion Supplementary Support Initiative (SISSI), bridged the gap in funding that eligible students would have otherwise received if they remained in their home HEI and the ERASMUS+ grant funding available under the 2014-2020 programme. The SISSI grant was first launched in 2014, providing eligible students with a top payment of €100 per month. This payment was incrementally increased and set at €180 per month in 2020. The SISSI was replaced following the launch of the 2021-2027 ERASMUS+ programme, which introduced an enhanced flat rate grant of €250 per month, targeted at students with fewer opportunities Overall, the share of disadvantaged students in Ireland participating in ERASMUS+ increased from 8% of overall mobilities in 2015/16 to 17% in 2019/20. (House of the Oireachtas 2022; O'Sullivan 2022).

4. Data and methods

4.1 Data

We analyse anonymised administrative data from the Higher Education Authority's (HEA) central database, the Student Record System (SRS), for the academic years 2018/19, 2019/2020, and 2020/21. The SRS contains a rich source of individual-level data on the universe of students enrolled across all publicly-funded HEIs in Ireland. HEIs submit data to the HEA annually, which is subsequently compiled to create the central database for higher education statistics in Ireland[8].

The data provided by the HEA is not a panel and it is not possible to link student records across years. Therefore, to avoid double counting, we focus our analysis on students in their third year of study in each academic year, which is when over 80% of all mobilities occur for students in Irish HEIs. We also restrict our sample to full-time undergraduate (honours degree) students, since again this is the group for which the vast majority of mobilities occur. A small number of HEIs were not included in our analysis due to missing mobility data[9]. In addition, non-Irish domiciled students were excluded from our analysis sample, as SES information, which is measured based on the home address of each student, was unavailable for students from outside of Ireland. Finally, students with missing or incomplete data relating to prior academic performance and/or type of upper secondary school attended were excluded. After applying these criteria, our analysis sample was a total of 64,230 third year full-time undergraduate students.

Table 1 presents definitions of the variables used in our analysis. Study abroad (*Abroad*) is defined as any short-term outward study mobility lasting at least one semester, up to a

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[8] For more information on how data are collected by the HEA, see https://hea.ie/statistics/information-for-institutions/srs-returns/.
[9] The five HEIs with missing mobility data are Athlone IT, IT Carlow, IT Tralee, Royal College of Surgeons in Ireland, and St. Angela's College.

maximum of one full academic year. In their reporting to the HEA, HEIs tag mobile students within each academic year, allowing us to construct a binary variable identifying students that have studied abroad in that year. However, differences in reporting across HEIs with respect to the type of mobility undertaken prevents us from disaggregating our mobility variable, since the exact duration or type of study abroad mobility (e.g., ERASMUS+, international mobility outside of the European Union, etc.) is unfortunately not available in the data.

[Insert **Table 1** about here]

However, an objective, spatially-based measure of SES is available in our data, which is based on the home address of each student and the Pobal HP Deprivation Index. This index is a commonly used socioeconomic indicator that scores each small area in Ireland (circa 100 households) in terms of its relative affluence or disadvantage. It uses information from Ireland's Census of Population, including data on employment, age profile, and educational attainment, to calculate the relative affluence of each small area[10]. The Deprivation Index Score (DIS) ranges from approximately -40 to +40, with higher values reflecting higher levels of relative affluence. In our analysis, values above +10 are classified as affluent.

Table 1 also defines a number of other variables used in our analysis. These include a student's age and sex, as well as academic performance at the end of upper secondary school examinations (CAO points). Variables relating to field of study as defined by the International Standard Classification of Education (ISCED), HEI type, and secondary school type are also included. In relation to the latter, DEIS schools[11] tend to be located in relatively disadvantaged areas, while fee-paying schools are generally attended by more affluent students.

Sample descriptive statistics are presented in Table 2 for mobile and non-mobile students, as

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[10] See Haase and Pratschke (2017) for more information on the derivation of the HP Deprivation Index.
[11] These are schools that are deemed to be underprivileged and so may access supplementary resources such as extra learning support for teachers and a home-to-community liaison programme through the Delivery of Equality of Opportunity in Schools (DEIS) system.

well as for the full sample of students. Overall, a total of 6,070 students in our sample studied abroad during our sample period, equating to an average mobility rate of 9.5%. Noticeable differences between the mobile and non-mobile sub-samples are clearly evident. For example, male students are underrepresented in the mobile population, which is consistent with previous research (Boettcher et al. 2016). It is also evident that mobile students are much more likely to attend a university, and to be enrolled on Arts and Humanities, and on Business, Administration, and Law courses. Of particular interest for this study, however, is the fact that the mean DIS is much higher for mobile than non-mobile students (4.5 versus 2.8), which is also reflected in the much larger share of mobile students from affluent backgrounds (29.8% versus 20.5%).

[Insert **Table 2** about here]

4.2. Methods

The starting point in our regression analysis is the following (base) linear probability model:

$$Abroad_i = \alpha^{base} + \beta^{base} Affluent_i + \gamma_1^{base} \mathbf{X}_i^P + \varepsilon_i^{base} \qquad [1]$$

where $Abroad_i$ is a binary variable indicating if student i studied abroad, $Affluent_i$ indicates if the student is from an affluent (i.e. high SES) area, and $\mathbf{X}_i^P$ denotes a vector of personal characteristics (i.e., *Age* and *Male*). Therefore, β^{base} captures the difference in mobility rates between affluent and non-affluent students, after controlling for age and sex. However, when considering the relationship between study abroad participation and SES, selection effects are important. We therefore also control for a range of other factors that are likely to be correlated with both studying abroad and SES. In particular, we sequentially add control variables across different specifications in a stepwise manner to give the following (full) model:

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$$Abroad_i = \alpha^{full} + \beta^{full} Affluent_i + \gamma_1^{full} \mathbf{X}_i^P + \gamma_2^{full} \mathbf{X}_i^E + \gamma_3^{full} \mathbf{X}_i^S + \varepsilon_i^{full} \qquad [2]$$

where $\mathbf{X}_i^E$ and $\mathbf{X}_i^S$ represent education- and school-related controls for student i as listed and defined in Table 1. This allows us to consider how the difference in participation rates by SES changes as controls are added and to estimate β^{full}, the independent association between *Abroad* and *Affluent* once the full set of controls are included.

However, while it is instructive to compare changes in the estimated social gap as more controls are added, it is not accurate to attribute any change in $\hat{\beta}$ to the addition of new covariates due to the problem of *sequence dependence* between independent variables. As one of the primary aims of this paper is to understand and quantify the underlying drivers of social inequalities in student mobility rates, we overcome this sequential ordering problem by adopting the decomposition technique proposed by Gelbach (2016). The Gelbach decomposition allows us to separate the mean difference in study abroad participation rates between affluent and non-affluent groups into two parts: one part that can be explained by measurable factors, and another that cannot. It then quantifies the relative importance of each factor in the explained difference.

Thus, the Gelbach decomposition enables us to quantify the relative contribution of each covariate included in Equation [2] on the estimated social gap. It does so by using the sample omitted variable bias formula, which explains the sensitivity underlying the relationship between β and the included covariates. This means that the decomposition assigns the coefficient difference between the two models (base and full specifications) to the influence of each covariate included. The portion of the social gap explained by additional covariates is

expressed as $\hat{\delta}_{Affluent} = \hat{\beta}^{base} - \hat{\beta}^{full}$, where the total difference is separable into k additional covariate groups:

$$\hat{\delta}_{Affluent} = \sum_k \hat{\delta}_{k,Affluent} = \sum_k (\hat{\Gamma}_{k,Affluent})(\widehat{Abroad}_k^{full}) \qquad [3]$$

Equation [3] shows that $\hat{\delta}_{k,Affluent}$, the contribution of the kth covariate, is the product of two channels of influence. The first is the SES difference in this factor after partialling out all other explanatory elements. More specifically, $\hat{\Gamma}_{k,Affluent}$ is the coefficient on $Affluent$ from an auxiliary regression of the kth covariate on all explanatory variables in the base model. The amount of the change explained by performance at upper secondary school, for example, depends on the raw social gap in this attribute after conditioning on the basic set of other factors. The second channel, $\widehat{Abroad}_k^{full}$, reflects how correlated the kth covariate is to the outcome under the full model. A sufficiently large coefficient associated with upper secondary school performance suggests that it will meaningfully contribute to the social gap.

In addition to the above, we also estimate models including interactions between $Affluent$ and some of our control variables (i.e., field of study and CAO points). This allows us to consider the extent to which there are heterogeneities in the relationship between study abroad participation and SES across groups. In addition, we also estimate models for sub-samples of language and non-language students. Finally, a range of robustness checks are also undertaken.

5. Results

5.1 Study abroad participation and SES

Table 3 presents results from the linear probability models and Gelbach decomposition. Model (1) is the base model and includes controls for age and sex, as well as year dummies, while

models (2) to (5) incrementally add different sets of covariates. All models were estimated using ordinary least squares (OLS). Columns (6) and (7) decompose the percentage point gap between baseline model (1) and the full model (5) i.e. it estimates the separate contribution of each independent variable in terms of explaining the effect it has on the estimated social gap in student mobility rates.

[Insert **Table 3** about here]

Model (1), our base model, shows that the social gap in the mobility rate across SES groups (i.e. affluent versus non-affluent students) is 4.1 percentage points after controlling for age and sex[12]. Given that the average mobility rate across all years in our sample is 9.5%, the gap between affluent and non-affluent student groups is practically, as well as statistically, significant. More specifically, the estimate implies that affluent students are 1.5 times more likely to participate in a short-term study abroad mobility than non-affluent students[13].

We consider a number of possible explanations for this large differential. First, affluent students in Ireland are more likely, on average, to have higher levels of prior academic performance (Cullinan, Denny, and Flannery 2021), and to perform better in college overall (Delaney and Devereux 2020b). This may provide them with greater opportunities to engage in activities such as study abroad. Meeting minimum academic requirements – often above those required to simply progress within the home institution – is common for students participating in study abroad programmes (Cullinan, Flannery, and Palcic 2022). It is plausible, therefore, that additional academic requirements could disproportionately impact students from

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[12] It should be noted that while all models include controls for age and sex, these variables have no effect on the estimated social gap.
[13] The final year of data in our sample (2020/21) was affected by the Covid-19 pandemic, which is likely to have negatively impacted mobility rates overall (Di Pietro and Perez-Encinas 2023). As our focus is on the social gap in mobility rates across SES groups, we have no reason to believe that including 2020/21 in our analysis would be problematic. However, to test the robustness of our estimates, we also estimated Models (1) - (5) and performed our decomposition analysis excluding the 2020/21 data. Results are presented in Appendix Table A2 and are broadly in line with the results presented in Table 3.

low SES backgrounds, resulting in an over-representation of affluent students participating in ISM. We find that upper secondary school performance (*CAO Points*), a good proxy for academic ability, does have an effect on the social gap, suggesting that academic ability plays an important role in explaining why affluent students are more likely to study abroad. In particular, Model (2) shows that after controlling for a student's prior academic performance, the predicted social gap reduces to 3.3 percentage points.

Second, we hypothesise that both field of study and HEI type (i.e. university or non-university) could play a role in explaining the social gap in mobility rates. This would be the case if affluent students are more likely to select into fields or courses that provide greater opportunities to study abroad, or to HEIs that do likewise. High SES students in Ireland tend to be over-represented in fields of study such as Social Sciences, Journalism, and Information, as well as Business, Administration, and Law (HEA 2022b), and we showed earlier that these are also fields where study abroad is more common (see Table 2). Similarly, affluent students are more likely to enrol in universities, while those from less affluent backgrounds typically study in ITs (Flannery and Cullinan, 2014), where there are fewer study opportunities. The addition of field of study in model (3) reduces the predicted social gap to 1.9 percentage points, while attending a university does not appear to the influence the gap in model (4), after controlling for field of study and other factors.

Third, the social selectivity of students attending fee-paying schools could also widen inequalities in mobility rates across groups. Students that attended fee-paying schools are, on average, from wealthier backgrounds. We assume that students from fee-paying schools may have higher levels of *cultural capital*, deriving from prior experience of international travel abroad (either with parents or in secondary school). As discussed in Section 2, higher levels of cultural capital accumulation by students from high SES backgrounds is an important factor in explaining the social selectivity of study abroad participation (Van Mol and Perez-Encinas

2022). In this context, we examine the role that secondary school type has on the social gap in study abroad participation in Model (5). Controlling for school type further reduces the predicted social gap, such that after controlling for personal, education, and school characteristics, the predicted social gap in mobility rates falls to 1.4 percentage points.

Columns (6) and (7) present the decomposition results for four contributing factors: academic ability, field of study, HEI type, and school type. Taken together, our full model explains two thirds (66.6% or 2.7 percentage points) of the disparity in mobility rates between affluent and non-affluent students. We find that academic ability explains the largest share (37.7%), followed by field of study (16.6%), and school type (12.1%).

A further consideration here is that students may enrol in courses where study abroad is not an option. Thus, the possibility that affluent students may be more likely to select into courses where mobility is a viable option, and vice versa for non-affluent students, is important to take into account. To do so, we re-estimated all models on a sub-sample including only courses where at least one student enrolled on a study abroad programme over the sample period[14]. In doing so, we focus specifically on inequalities within courses where student mobility is an option for students. The results, presented in Appendix Table A3, are broadly similar to those in Table 3 i.e. the social gradient in studying abroad reduces substantially as we add control variables and the decomposition analysis shows that academic ability and field of study help explain the majority of the gap[15].

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[14] Course-level data in the SRS enables us to identify each individual course where zero mobilities have been recorded over any of the years in our sample. If at least one student within each course is recorded as having studied abroad in any of the three years, that course is classified as a *mobile course* and all students enrolled in that programme remain as part of the sub-sample analysis. In contrast, in courses where zero students have studied abroad, all students in that course are excluded.

[15] It is also notable that once non-mobile courses are excluded, the number of observations in the sample reduces from 64,230 to 24,907. This means that over 60% of students in our sample are enrolled in courses where no mobilities are recorded.

5.2 Heterogeneity Analysis

5.2.1 Field of study

The results above show that selection into certain fields of study explains part of the social gap in mobility rates. However, the degree to which inequalities may exist (or not) within specific fields of study remains largely unknown. From a policy perspective, it is important to know if and where inequalities are most acute. To consider this, we re-estimate Equation [2], including an interaction between *Affluent* and field of study. This captures the differential relationship between study abroad participation and SES across different fields of study.

The predicted social gap in study abroad participation rates by field of study is illustrated in Figure 1, which shows considerable heterogeneity in the SES differential across fields. For example, affluent students enrolled in Business, Administration, and Law courses and in Arts and Humanities courses have higher participation rates than otherwise similar students from non-affluent backgrounds. In terms of context, we showed earlier that the majority of mobilities occur in these two fields of study (see Table 2). For Business, Administration, and Law courses the difference in mobility rates across SES groups is an estimated 4 percentage points, and is 2.7 percentage points for Arts and Humanities courses. Additionally, affluent students enrolled in Social Sciences, Journalism and Information courses are more likely to study abroad, albeit the magnitude of the estimated gap is less pronounced at 1.8 percentage points. There are also large differences, though not statistically significant, for agriculture- and services-related courses. Interestingly, we also observe that affluent students enrolled in health-related courses are less likely to study abroad. The magnitude of this gap is striking when put in context of the overall mobility rate for students studying health-related programmes. In particular, the mobility rate for health-related courses is just over 1%, which means that non-affluents students in these programmes are more than twice as likely to study abroad then affluents students.

[Insert **Figure 1** about here]

5.2.2 Academic ability

Our results suggest that prior academic ability plays a very important role in understanding social inequalities in study abroad participation overall. However, since high-achieving students are less likely to face academic barriers when it comes to enrolling in a study abroad programme, it is important to also understand if students from low SES backgrounds with strong academic ability may face other constraints (for example, financial barriers). Indeed, Netz et al. (2021) highlights the importance of targeting affirmative action policies towards highly capable students from low SES backgrounds as an effective and efficient method of reducing the social gap in student mobilities. Similarly, it is plausible that lower-ability students from affluent backgrounds may be more willing to undertake mobility opportunities due to prior international experiences, such as family holidays, school trips, or other network effects.

To consider this, we again introduce an interaction term to Equation [2], this time between *Affluent* and prior academic performance. This helps us to understand the differential impact of SES across the upper secondary school performance distribution. To do so, *CAO Points*, our measure of prior academic performance, is divided into quintiles, with quintile 1 (5) capturing students with the lowest (highest) level of prior academic achievement. Figure 2 illustrates the difference in participation probabilities between affluent and non-affluent students across the points distribution. We observe that high-achieving affluent students have a much higher propensity to study abroad than high-achieving non-affluent students, even after controlling for a range of confounding factors, with the estimated social gap equal to 4 percentage points. While there are some minor differences across the other quintiles, these are not statistically significant.

5.2.3 Language students

While language skills are generally not a requirement for participating in study abroad, a lack of foreign language proficiency may be a barrier for some students when deciding to do so (Brown, Boateng, and Evans 2016). In addition, there is evidence showing that study abroad is strongly associated with improved language skills (Magnan and Back 2007; Sorrenti 2017; Cullinan, Flannery, and Palcic 2022) and that these benefits are largest for low SES students (Sorrenti 2017). In this context, we examine if study abroad participation rates differ across SES groups for students enrolled in language-related courses and how this compares to non-language courses[16].

Table 4 shows that study abroad mobility rates for language courses are, not surprisingly, significantly higher than for non-language courses and that this is the case for both affluent and non-affluent students. Before controls, the social gap in mobility rates for language and non-language students are broadly similar, at 3 and 4 percentage points respectively, and both differences are statistically significant. Once controls are added, the social gap reduces to 2 percentage points for both groups, though the gap is not statistically different for language students. Furthermore, the relative magnitude of the difference for language students is practically small, given the very high rates of mobility within language courses. Overall, this suggests that once a student is enrolled in a language course, SES does not play a significant

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[16] To do so, we created a binary variable indicating if a student was a language student or not based on responses to the following fields of study categories within the SRS: (0230) Languages not further defined; (0231) Language acquisition; (0232) Literature and linguistics.

role in whether or not they study abroad[17]. This result is similar to Schnepf and Colagrossi (2020), which found no SES gradient amongst language students.

[Insert **Table 4** about here]

6. Discussion

With rising numbers of college students studying abroad for a semester or more, ensuring that mobility opportunities are not concentrated in a small affluent share of the population is important, especially given the many benefits associated with ISM. While other studies have shown that study abroad is socially selective, quantifying what drives these inequalities remains insufficiently understood. Moreover, little is currently known about where inequalities are most acute.

In this paper we examine the relationship between study abroad participation and SES in Ireland. We find that large socioeconomic inequalities exist, even after controlling for a range of potentially confounding variables. Results from our decomposition analysis show the importance of factors such as performance in upper secondary school, field of study, HEI type, and school type in terms of explaining the social gap. Our use of large-scale administrative data is rare in this context, and this allows us to analyse heterogeneity in the relationship between study abroad and SES across a range of dimensions. This marks a unique and important contribution to the existing literature and we find that inequalities are particularly pronounced within specific fields of study, e.g. Business, Administration, and Law courses, and among high-achieving students. We find no significant social gap in study abroad participation for language students.

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[17] In contrast, affluent students studying non-language courses have a much higher predicted probability of studying abroad in relative terms than non-affluent students, which is consistent with our main model results presented earlier.

The results from our analysis have a number of important implications. First, while demographic factors such as age and gender have no notable impact on the social gap, academic ability, as measured by prior educational performance, appears to play a major role. This result is consistent with Di Pietro (2020) and Lörz, Netz and Quast (2016) and suggests that much of the inequality we observe in participation can be linked to socioeconomic inequalities in educational attainment that arise prior to students enrolling in higher education. In addition, as performance in upper secondary school in Ireland also determines, in large part, both where a student goes to college and what course they can study (see Section 3), this suggests a second channel through which prior socioeconomic inequality in educational attainment, i.e. in secondary school, can impact on inequalities in study abroad participation. This is because the opportunity to engage in the wider array of experiences available to higher education students, including activities such as study abroad, are contingent on decisions made earlier in a student's educational journey. Thus, information about possible study abroad opportunities within specific courses/HEIs, as well as the associated benefits, could be more clearly communicated to students in upper secondary school. This in turn could help ensure that students select into courses with sufficient knowledge about activities such as study abroad, irrespective of their socioeconomic background.

A second important finding is that socioeconomic disparities in study abroad participation are particularly pronounced among certain groups of students. Our paper is the first to quantify the differential impact of SES on study abroad participation by field of study and across the performance distribution. Our findings are both timely and relevant following the launch of the EU's latest ERASMUS+ programme (2021-2027), which has a stated policy aim of supporting students with fewer opportunities. In particular, our analysis can help inform better targeting of such initiatives.

Third, we find no significant independent relationship between study abroad participation and SES for students enrolled in language courses. Many language courses have a mandatory study abroad element, which means that students enrol in the knowledge that undertaking an exchange programme is an in-built part of their degree. Anecdotal evidence suggests that students from low SES backgrounds are more likely to forgo study abroad opportunities in these courses, despite being part of their curriculum. In circumstances where students cannot study abroad[18], they may instead opt to take elective modules in their home HEI. Our results do not support such evidence, though more granular analysis may be required e.g. at individual course level.

Fourth, it is important to note that one-third of the social gap is not explained in our full model. This implies that while our dataset provides detailed information on students across a range of dimensions, there are other factors that influence a student's decision to study abroad, and that differ by SES, beyond those captured in the SRS. Further research should therefore explore other potential barriers and their differential effects across SES groups. For example, the degree to which home/family commitments and part-time work impact study abroad participation rates may not be homogenous across SES groups. This is particularly relevant for high-achieving students where inequalities are most pronounced. Understating why high-achieving students from non-affluent backgrounds have a lower propensity to study abroad than their affluent peers, even after controlling for other factors, is a surprising finding from our research, and one that should be investigated further.

Finally, there are limitations to our analysis which should be borne in mind. First, owing to the fact that SES data was available only for Irish-domiciled students, international students were omitted from our analysis. The exclusion of international students (i.e. students enrolled in

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[18] Students may request not to study abroad for many reasons. For example, financial barriers, caring commitments, and illness may prevent students from completing part of their degree abroad.

programmes in Ireland but not normally resident in Ireland prior to enrolment) may bias our overall measure of mobility. We believe it is plausible that international students would be more likely to study abroad for a semester or more, which would imply that the mobility rate presented in this analysis is a lower bound estimate. Second, the data we have is not available in panel format and thus we cannot track students over time. Third, as our data is limited to one country, Ireland, generalising these findings across other jurisdictions should be treated with caution. Nonetheless, despite these limitations, our analysis provides new and valuable insights relating to socioeconomic inequality in study abroad participation, as well as direction for future studies in other countries.

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Tables

Table 1. Variable definitions.

Variable	Definition
Abroad	= 1 if outward study abroad mobility occurred; 0 = else
DIS	= Deprivation Index Score based on a student's home address.
Affluent	= 1 if Affluent (DIS>=10); 0 = else
Age	= Age of student on the census date of each academic year
Male	= 1 if male; 0 = female
CAO Points	= Number of CAO points achieved in the Leaving Certificate examination
Field of Study	= 1 if Agriculture, forestry, fisheries, and veterinary
	= 2 if Arts and humanities
	= 3 if Business, administration, and law
	= 4 if Education
	= 5 if Engineering, manufacturing, and construction
	= 6 if Generic programmes and qualifications
	= 7 if Health and welfare
	= 8 if Information and communication technology (ICT)
	= 9 if Natural sciences, mathematics, and statistics
	= 10 if Services
	= 11 if Social sciences, journalism, and information
University	= 1 if University; 0 = IT/college
Post-primary school type	= 1 if DEIS
	= 2 if Fee-paying
	= 3 if Neither
	= 4 if Unknown/missing

Notes: In our analyses, the university sector comprises 8 HEIs (DCU, MU, UCC, UCD, UG, UL, TCD, and TUD) and the non-university sector comprises 10 HEIs (CIT, IADT, DkIT, GMIT, IT Sligo, LkIT, LIT, MIC, NCAD, and WIT). AIT, IT Carlow, IT Tralee, RCSI, and St. Angela's College are not included due to incomplete data. See Appendix Table A1 for abbreviations.

Table 2. Sample descriptive statistics.

Variable	Mean (SD) or %		
	Mobile Students	**Non-Mobile Students**	**All Students**
DIS	4.5 (8.5)	2.8 (8.5)	3.0 (8.5)
Affluent	29.8%	20.5%	20.9%
Age	20.7 (0.7)	20.9 (1.6)	20.8 (1.7)
Male	37.9%	47.1%	46.2%
CAO	471.9 (75.5)	443.9 (81.3)	446.5 (81.2)
Agriculture, etc.	0.7%	1.9%	1.8%
Arts and humanities	36.6%	17.0%	18.9%
Business, etc.	37.4%	21.5%	23.0%
Education	1.1%	6.7%	6.2%
Engineering, etc.	3.7%	11.0%	10.3%
Health and welfare	1.6%	13.5%	12.4%
ICT	1.4%	5.6%	5.2%
Natural sciences, etc.	2.9%	13.4%	12.4%
Services	2.3%	2.0%	2.1%
Social sciences, etc.	12.4%	7.4%	7.9%
University	91.6%	79.0%	80.2%
DEIS	5.9%	8.0%	7.8%
Fee-paying	18.3%	11.0%	11.7%
Neither	71.2%	76.1%	75.7%
Unknown	4.6%	4.9%	4.8%
Observations	6,070	58,160	64,230

Source: Analysis of Higher Education Authority Student Record System data.

Table 3. The relationship between study abroad participation and SES.

	Dependent Variable: *Abroad*					Decomposition	
						Diff	% Explained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Affluent	0.041***	0.033***	0.019***	0.019***	0.014***		
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)		
Controls							
CAO Points	No	Yes	Yes	Yes	Yes	0.015	37.7%
Field of Study	No	No	Yes	Yes	Yes	0.007	16.6%
University	No	No	No	Yes	Yes	0.000	0.3%
School Type	No	No	No	No	Yes	0.005	12.1%
Observations	64,230	64,230	64,230	64,230	64,230		
R-squared	0.025	0.033	0.104	0.104	0.104		
Total						0.027	66.6%

Notes: All models include age, sex, and year dummies and were estimated using OLS. Standard errors in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Source: Analysis of Higher Education Authority Student Record System data.

Table 4. Predicted social gap in study abroad participation rates for language and non-language courses.

	Study Abroad Participation Rate (%)	
	(1) No Controls	(2) With Controls
Language courses		
Affluent student	0.46	0.45
Non-affluent student	0.43	0.43
Difference	0.03** (0.015)	0.02 (0.015)
Non-language courses		
Affluent student	0.11	0.10
Non-affluent student	0.08	0.08
Difference	0.04*** (0.003)	0.02*** (0.003)

Notes: Column (2) models include controls for age, sex, year, CAO points HEI type, and school type and were estimated using OLS. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Source: Analysis of Higher Education Authority Student Record System data.

Figures

Figure 1. Predicted social gap in study abroad participation rates by field of study.
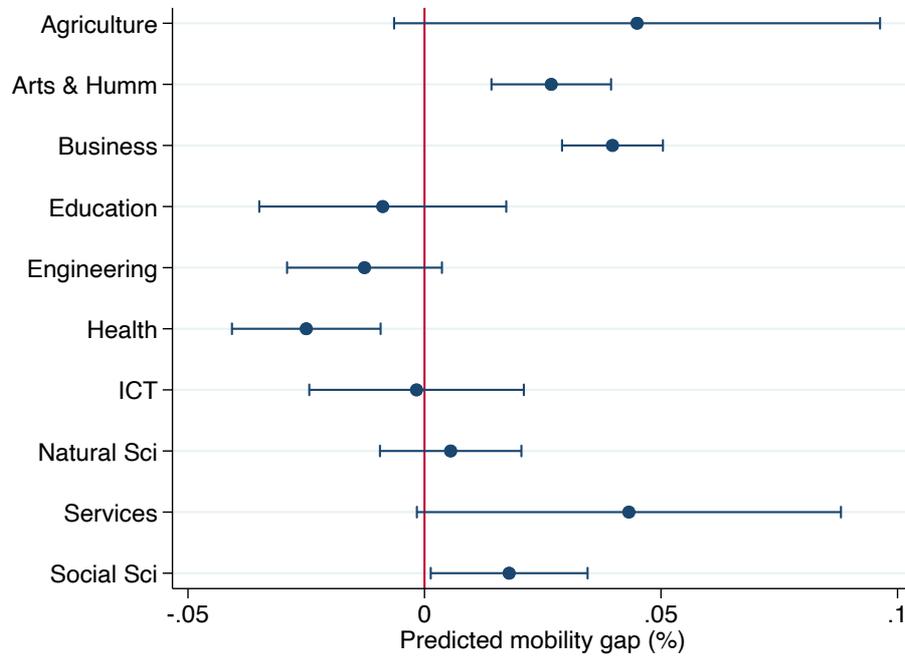
Notes: The model includes controls for age, sex, year, CAO points, HEI type and school type and was estimated using OLS. The horizontal bars represent 95% confidence intervals.

Source: Analysis of Higher Education Authority Student Record System data.

Figure 2. Predicted social gap in study abroad participation rates by prior academic achievement.
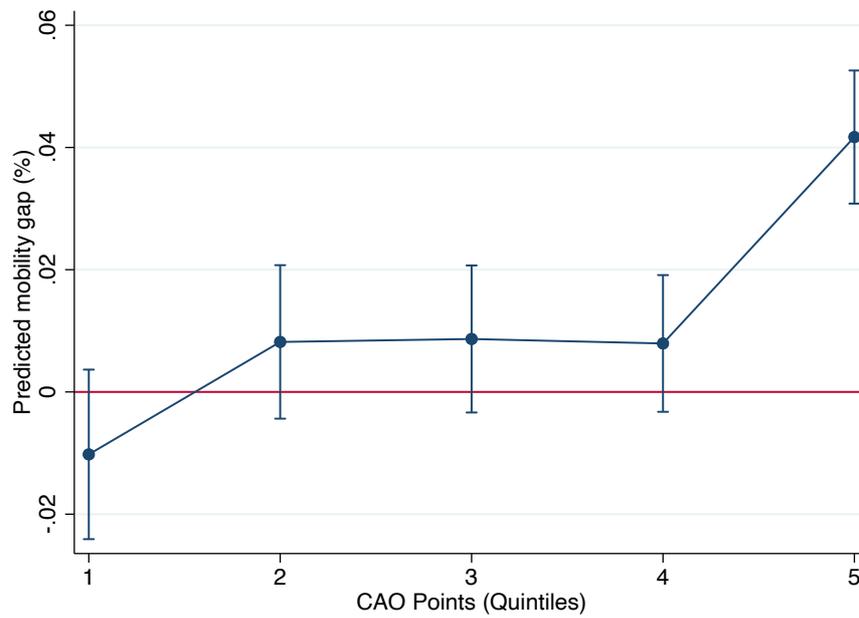
Notes: The model includes controls for age, sex, year, field of study, HEI type and school type and was estimated using OLS. The horizontal bars represent 95% confidence intervals.

Source: Analysis of Higher Education Authority Student Record System data.

APPENDIX

Table A1. Higher Education Institutions in Ireland: 2019 and 2023.

2019		2023
Letterkenny IT (LkIT)	}	Atlantic Technological University (ATU)
Galway-Mayo Institute of Technology (GMIT)		
Sligo IT		
Dublin City University (DCU)		Dublin City University (DCU)
Dun Laoghaire Institute of Art, Design and Technology (IADT)		Dun Laoghaire Institute of Art, Design and Technology (IADT)
Dundalk IT (DkIT)		Dundalk IT (DkIT)
Mary Immaculate College		Mary Immaculate College
Maynooth University (MU)		Maynooth University (MU)
Cork IT (CIT)	}	Munster Technological University (MTU)
IT Tralee		
National College of Art and Design (NCAD)		National College of Art and Design (NCAD)
Royal College of Surgeons in Ireland (RCSI)	}	Royal College of Surgeons in Ireland (RCSI)
Waterford IT (WIT)	}	South East Technological University (SETU)
IT Carlow		
St Angela's College of Home Economics		St Angela's College of Home Economics
Technological University Dublin (TUD)		Technological University Dublin (TUD)
Athlone IT (AIT)	}	Technological University of the Shannon (TUS)
Limerick IT (LIT)		
Trinity College Dublin (TCD)		Trinity College Dublin (TCD)
University College Cork (UCC)		University College Cork (UCC)
University College Dublin (UCD)		University College Dublin (UCD)
University of Galway (UG)		University of Galway (UG)
University of Limerick (UL)		University of Limerick (UL)

Table A2. The relationship between study abroad participation and SES excluding 2020/21 data.

	Dependent Variable: *Abroad*					Decomposition	
						Diff	% Explained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Affluent	0.049***	0.039***	0.023***	0.023***	0.017***		
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)		
Controls							
CAO Points	No	Yes	Yes	Yes	Yes	0.018	37.2%
Field of Study	No	No	Yes	Yes	Yes	0.008	16.9%
University	No	No	No	Yes	Yes	0.000	-1.1%
School Type	No	No	No	No	Yes	0.005	10.7%
Observations	41,776	41,776	41,776	41,776	41,776		
R-squared	0.009	0.017	0.101	0.101	0.101		
Total						0.030	63.7%

Notes: All models include age, sex, and year dummies and were estimated using OLS. Standard errors in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Source: Analysis of Higher Education Authority Student Record System data.

Table A3. The relationship between study abroad participation and SES for mobile courses.

	Dependent Variable: *Abroad*					Decomposition	
						Diff	% Explained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Affluent	0.062***	0.050***	0.025***	0.022***	0.019***		
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)		
Controls							
CAO Points	No	Yes	Yes	Yes	Yes	0.023	42.5%
Field of Study	No	No	Yes	Yes	Yes	0.009	17.1%
University	No	No	No	Yes	Yes	0.007	12.1%
School Type	No	No	No	No	Yes	0.000	0.8%
Observations	24,907	24,907	24,907	24,907	24,907		
R-squared	0.049	0.055	0.176	0.177	0.177		
Total						0.039	72.4%

Notes: All models include age, sex, and year dummies and were estimated using OLS. Standard errors in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Source: Analysis of Higher Education Authority Student Record System data.