The Effect of a University Degree in English on International Labour Mobility*

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ABSTRACT

I investigate the effect of studying in English in a non-English speaking country, Italy, on international labour market mobility. I exploit the introduction of Master degrees in English by a university whilst students are enrolled in their Bachelor in that university, as an instrument for studying in English. I find that English-taught degrees increase the individual's probability of working abroad by 11.3 percentage points. The results are driven by students in STEM fields, from non-top universities and from universities located in the less-developed regions of the country. Overall, results suggest that English-taught degrees foster graduates' competitiveness and enhance labour mobility.

JEL Classification: I21, I23, I26, J24, J61
Keywords: degree in English, labour mobility, high-skilled migration

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1 Introduction

European Union priorities for 2020 include flagship initiatives for fostering education and labour mobility in order to stimulate youth employment at home and abroad (EC, 2011). Yet, while the link between studying abroad and international labour mobility is well recognized (Oosterbeek and Webbink, 2011; González et al., 2011; Parey and Waldinger, 2011), the effect of studying in English in a non-English speaking country on graduates' migration decisions is still unexplored. Importantly, understanding labour market outcomes of graduates in English-taught programs is central for the analysis of the growing investments in these degree programs that European universities made in the last decade, and to verify if these programs contribute to the European labour mobility goal.

From a theoretical perspective, an increase in the supply of English-taught programs might have two opposite effects. On the one hand, it might clearly enhance international work opportunities. On the other hand, a degree in English may also improve competitiveness of graduates within the national labour market, thus resulting in better labour outcomes that may reduce the comparative benefits of international migration. Even though both mechanisms are plausible, providing causal evidence on this issue is challenging due to many potential confounding factors. Ideally, one would observe labour market outcomes of students that were randomly assigned to university programs held in English and those in the native language. In the absence of such a randomized experiment, establishing a causal link between attaining a degree in English and working abroad after graduation is a challenging task, because students who decide to attend a program in English are in many ways different from students who attain a degree in their mother tongue, also because the intent to move abroad may induce students to study in English.

In this paper, I provide causal evidence shedding light on this research question by proposing a novel instrument for enrollment in a English-taught master program. Specifically, I exploit the introduction of a Master degree in English in a given university at a time when a student is enrolled in a Bachelor degree in that university.[1] Specifically, the instrument takes value one for students exposed to the introduction of a MA in English in their university and discipline, while they are enrolled in their BA. This avoids students self-selecting into programs that offer MA in English according to their future migration intentions. Italy is an ideal setting where to investigate this research question as different universities introduced the possibility to study in English in different years, starting in 2008.[2] Moreover, within the same university, different fields started offering degrees in English in different academic years. Importantly, the timing of the introduction of English-taught programs is unlikely to be predicted by students (Card, 1993, 2001; Parey and Waldinger, 2011). [3]

The results suggest that studying in English has a strong causal effect on graduates' labour market mobility. In particular, I find that attaining a MA in English increases the individual's probability of working abroad, one year after graduation, by 11.3 percentage points. This is a relatively large effect when compared to the sample average probability of working abroad that increases almost fivefold for those with an English degree. I present several robustness checks for this result. First, since I define my instrument according to a weak monotonicity assumption (i.e., it takes value zero if English degree was already

[1] For the sake of simplicity, I refer to the second cycle degree as "Master of Arts" (MA, it lasts two years), and I refer to the first cycle degree (three years duration) as "Bachelor of Arts" (BA).

[2] The competitiveness of the Italian university on the European market and the internationalization of Italian graduates represent the two main objectives of this supply increase.

[3] The fraction of English-taught programs over the total degrees supply rose sharply from 1 percent in 2008 to roughly 8.5 percent in 2016. Degree programs in English differ from those in Italian exclusively for the language feature. The number of the exams as well as the number of credits devoted to specific disciplinary areas, are imposed equally to all degree programs by national rules (see Reform 270/04).

in place while student was in BA), I implement the model using a different definition of the instrument and of the sample, allowing for strong monotonicity in order to analyse the power of the treatment measure and to check how the coefficient reacts to this change in the assumption. In particular: on the one hand, I remove from the sample individuals enrolled in their BA with already existing degrees in English; on the other hand, I define a new instrument that takes value equal to one if either MA in English degree was introduced or was already in place while student was in BA.[4] Second, I estimate the model on groups of cohorts of graduates in order to test the power of the instrument over different time periods. Third, I remove fields of study one at a time to check if fields for which there is no MA in English inflate standard errors. Fourth, I also run my regressions removing regions of study one at a time to assess migration heterogeneity to border proximity. Fifth, since, in order to avoid endogeneity issues, the instrument does not take into consideration the fact that students may switch university and/or field of study from the BA to the MA, I remove from the sample different groups of "switchers" to test the coefficient response. My results are not circumscribed to particular fields of study, regions or movements in universities and fields from BA to MA, and are highly robust for all these sensitivity analyses. Finally, I investigate if results are somehow driven by graduates belonging to specific groups of disciplines, universities or geographical areas. For this reason, at first, I divide the sample for graduates in Science, Technology, Engineering and Mathematics (STEM) and in No-STEM fields. Second, I use the Quacquarelli Symonds World University Ranking (QS-Ranking)[5] and I split the sample for graduates coming from the top ten universities and

[4] I voluntarily introduce endogeneity in the definition of the new instrument in order to test for the strong monotonicity.

[5] The QS-Ranking is one of the world's most popular university ranking. For more info, please visit: https://www.qs.com/rankings/.

graduates who do not. Third, I divide the sample for graduates belonging to the north, the center or the south of the country. I find a positive and statistically significant result exclusively for graduates in STEM fields, for students not graduated in one of the top ten universities of the country and for students coming from the south. These results suggest that STEM fields, that are also those more required at the international level, are those that benefit more from the introduction of a MA in English. Moreover, the latter results provide empirical evidence that studying in English improves the competitiveness on the international labour market for graduates that do not come from best national institutions or that are located in the less-developed regions.

In order to provide evidence for the external validity of the results, I implement the test on the conditional independence assumption proposed by Black et al. (2017) that allows measuring the selection bias. Basically, the test constitutes on estimating a reduced form model on the sample of treated, comparing the so-called *Compliers* and *Always Takers*, and on the sample of the untreated to compare *Compliers* and *Never Takers*. Surprisingly, I find no evidence of a strong selection bias. However, the test provides only noisy evidence of no selection due to the small size of the treatment sample. For this reason, it seems more prudent to generalize the local average treatment effect on *Compliers* only to the subpopulation of *Never Takers*.

This paper relates to three different strands of the literature: the effect of college education decisions on labour mobility, the role of language knowledge on migration and on labour outcomes, and finally the effect of studying abroad on labour mobility. On one hand, Kodrzycki et al. (2001) report a descriptive evidence that US college graduates are more likely to migrate than those without a college degree. Groen (2004) documents that the choice of studying in a particular state positively affects the probability of working in that state after the

end of the studies; he solves for selection bias treating endogeneity as an omitted variable, so he used the set of states among which individuals can apply for as a way to control for heterogeneous location preferences. Moreover, Malamud and Wozniak (2010) study how college completion and attendance in the US affect the probability of a long-distance move outside the birthplace. They find that attending college increases the probability of residing out-of-state by 35 percentage points, using an instrumental variable approach. On the other hand, Adsera and Pytlikova (2015) use a classical gravity model for studying migration adding linguistic distances. They find that migration rates increase with linguistic proximity. Aparicio Fenoll and Kuehn (2016) study the effect of introducing foreign language into compulsory school on subsequent migration across European countries; they find that it increases the total number of emigrants by 20 percent. Furthermore, with respect to the labour market outcomes, knowledge of the host country language is commonly found to have a positive effect on employment and wage outcomes of migrants (Dustmann and Fabbri, 2003; Bleakley and Chin, 2004; Chiswick and Miller, 2010, 2014).[6]

To the best of my knowledge, the current paper is the first analysing the link between the completion of a MA in English in a non-English speaking country and international labour mobility. One potential reason is data availability: most surveys do not contain information on the language of the degree, and this is due also to the sharp increase in the supply of MA in English that only occurred recently. The strand of the literature more closely related to this paper is the one looking at the link between studying abroad and labour mobility. Oosterbeek and Webbink (2011) investigate whether studying abroad increase the probability to live abroad later in life, they use an instrumental variable

[6]It is also recognized that the knowledge of foreign languages among natives has a strong positive effect on earnings (Williams, 2011; Ginsburgh and Prieto-Rodriguez, 2013; Di Paolo and Tansel, 2015; Azam et al., 2013; Stöhr, 2015; Ginsburgh and Prieto-Rodriguez, 2011) and employment Donado (2017).

approach based on cut-offs in the Dutch ranking for a scholarship program to study abroad. They find that the number of months spent studying abroad strongly and positively affects the likelihood of living abroad. Furthermore, the work of Parey and Waldinger (2011) is particularly relevant for this work. The authors use the introduction of the ERASMUS program as an instrument to estimate the causal effect of studying abroad on labour market mobility. They find an increase of 15 percentage points in the probability of working abroad of German graduates.

This work provides evidence that a degree in English, obtained in the home country, is a very important determinant of labour mobility after one year from graduation. These results indicate that authorities should foster the supply of MA in English for promoting youth labour mobility and competitiveness among universities. In particular, this work suggests that supporting the supply of MA in English is a good policy instrument to foster graduates' mobility. However, data do not allow yet to investigate the role of MA in English on migration decision in the medium-run. For this reason, it is not possible to measure the return to investment in human capital or brain drain effects, although these are potentially interesting and relevant questions for future research.

The paper is structured as follows. Section (2) describes the institutional background of the Italian case and the evolution of the supply of degrees in English. Section (3) presents the data. Section (4) explains the identification strategy. Section (5) reports descriptive statistics and balance tests. Section (6) shows and discuss the results on the individual's probability of working abroad and presents all the robustness checks. Section (7) describes different test on selection bias providing evidence for the external validity of the main results. Section (8) concludes.

2 The Italian Case: Institutional Background

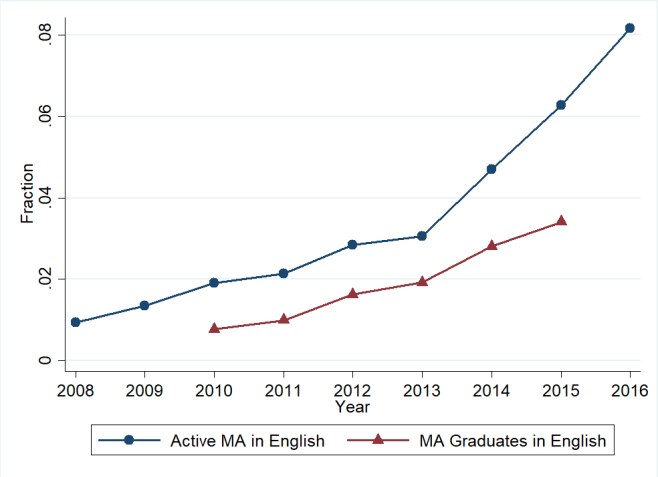
The Italian university system is basically structured in two main degree cycles. The first cycle *Laurea Triennale* is comparable to the *Bachelor of Arts* (BA) and it has a legal duration of three years, whereas the second cycle, *Laurea Magistrale*, is comparable to the *Master of Arts* (MA) with legal duration of two years.[7]

Since 2008 Italian universities started increasing the availability of degree programs in English.[8] The fraction of MA in English over the total MA supply rose from 1 percent in 2008 to 8.5 percent in 2016, and it increased sharply from 2013 with a rate of increase of approximately 2 percentage points per year. Figure (1) shows the dynamic of the supply of MA in English over the horizon 2008-2016. The observed trend is principally due to the internationalization objective of the Italian universities that aim to represent an attraction pole for international students, researchers, and scholars in competition with the other European institutes. Moreover, it shows the ratio of graduates in English over the total number of MA grads (i.e., the triangle indexed line) for the period 2010-2015. Comparing the two curves is it possible to observe that the evolution trends are almost the same. Basically, a 3 percent supply of MA in English in 2012 produces a 3 percent of MA graduates in English in 2014.

[7]There is an exception called *Laurea Magistrale a Ciclo Unico* that is basically a MA with legal duration of four to six years. Medicine and Law are the two main disciplinary areas characterized by this type of MA program. However, I do not take in consideration this type of degrees in the analysis.

[8]One caveat on the Italian supply of degrees in English is that Italian universities have to declare the language in which the degree program is given exclusively from 2008, with the introduction of a new reform of the academic system (Act 270/04). For this reason, I consider only graduates under the new sorting. The new reform has been introduced in the a.y. 2008/2009 and all universities have to adopt the new regime by the a.y. 2010/2011. However, changes forced by the reform do not directly relate to the English feature of the degrees. The reform generally aimed to create a homogeneous structure of the degree programs across Italian universities. Moreover, even though language declaration is in force since 2008, however, only few MA in English were already in place with the old sorting, and they were principally available from private universities that are not taken into consideration for this work. For more details on the reform see Stefani and Zara (2009).

Figure 1: Fraction of Active MA and Graduates in English

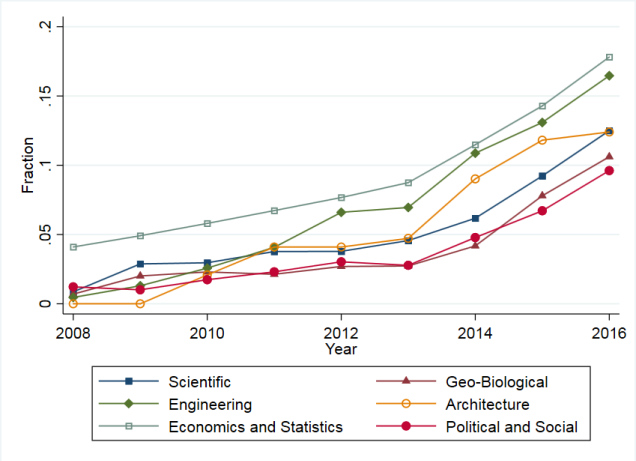


Note: The curve reports the fraction of MA in English over the total MA supply and the fraction of graduates in English over the total MA graduates. The fraction active degree in English is computed on data provided by MIUR, whereas the fraction of graduates in English is computed on AlmaLaurea data for the cohorts of graduates 2010-2015 and it is net of foreign students.

Figure (2) reports the fraction of MA in English by fields of study. The sharp increase observed from 2013 is mainly due to the adoption of MA in English by more universities and fields. In Italy, university degrees are grouped in sixteen different disciplinary areas in accordance with the national system of classification (Act 341/90). Fields of study include both Bachelor and Master degrees of the same subject. The increase in the supply of MA in English was heterogeneous among fields as described in Figure (2). More specifically, Figure (2) shows the supply of MA in English as a fraction over the total MA supply by disciplinary area. Analysing the curves, the fields of study in sciences, technology, engineering and mathematics (STEM) are those that experienced a sharp increase in the availability of MA in English. In particular, Economics and Engineering have shown a rise that reaches a peak above 15 percent in 2016.

However, also the other fields experienced a similar trend over the observed period of time, even if with reduced magnitude. Furthermore, since 2013 all the curves become steeper showing a stronger progressive increase in the supply

Figure 2: Fraction of Active MA in English by Field of Study



Note: The curves report the fraction of MA in English over the total MA supply. Graph takes into consideration exclusively fields that showed an intensive increase in the supply. The supply trend of the low-frequency fields is available upon request. The fraction is computed on data provided by MIUR.

of MA in English for the adoption of these programs by a larger number of universities.

3 Data

I use data provided by the AlmaLaurea[9] consortium of Italian universities collecting information about graduates at the time of graduation (*Profilo Laureati*) and follow-up interviews after one, three and five years from graduation to investigate the employment conditions of graduates (*Condizione occupazionale dei laureati*). The *Profilo Laureati* includes demographic, academic and socio-economic condition of the graduates (e.g., citizenship and residence, high school and BA final grades, parents' educational level and occupation). The *Condizione occupazionale dei laureati* collects data on the employment status including info

[9] AlmaLaurea covers approximately 85 percent of Italian university with an exception for some private institutions (e.g., Bocconi, LUISS, etc.) without taking into account telematic universities.

on wages, the type and location of the job[10] (Italy or abroad), the sector of employment, and the type of contract. Response rates are remarkably high: 82-90 percent one year after graduation, approximately 80 percent three years after graduation, and 72 percent after five years as it is shown in the Table (1) below.[11]

Table 1: Universities Participation and Students' Response Rate

Cohort	Number of Universities	Students' response rate:			
		At graduation	1 year after	3 years after	5 years after
2010	57	0.916	0.891	0.799	0.721
2011	61	0.919	0.856	0.768	0.686
2012	63	0.906	0.854	0.748	n.a.
2013	64	0.910	0.829	0.731	n.a.
2014	64	0.905	0.821	n.a.	n.a.
2015	71	0.877	0.816	n.a.	n.a.

Note: Response rates refer exclusively to MA graduates (i.e., 2 years of legal duration). Administrative information is provided by universities and it is full.
Source: Survey and reports' statistics are available at: www.almalaurea.it/en

Moreover, I use data provided by the Italian Ministry of Education (MIUR), basically a list of all active degree programs in English from 2008 that I match with AlmaLaurea data in order to identify graduates with a MA in English.

For this work, I take into consideration cohorts of graduates from 2010 to

[10] Unfortunately, info on the specific destination country is not available for all cohorts and all follow-up interview spells. For this reason, I use the generic variable reporting if graduates work in Italy or abroad.

[11] AlmaLaurea surveys students with the following methods. On the one hand, the first interview is online on the university website, and it is made at the time of the graduation and all students have to fulfill the questionnaire in order to obtain a certificate that allows them to obtain the graduation title. Administrative data (i.e., type of degree, year of enrollment, year of graduation, final grade, contacts info, etc.) are full and provided directly by universities. For this reason, response rates at graduation are not full because AlmaLaurea recovered administrative data from some institutions that were not associated in the past. On the other hand, follow-up interviews are sent via mail, and graduates have a specific period of time to answer. If graduates do not answer on time, AlmaLaurea starts surveying by phone calls using contacts information provided by universities.

2015, and I restrict the attention to MA graduates under the new reform due to the supply evolution of English MA presented above and to the availability of the information on language from 2008. The final sample constitutes of 242,070 observations.[12]

For this sample, I construct an indicator variable, named *WorkAbroad*, that takes value 1 if MA graduates work abroad after one year from graduation, while 0 if they work in Italy or they do not work.[13] I look at the information one year after graduation in order to construct the variable homogeneously among cohorts, since information at three and five years is not available yet for all graduates (Table (1)). Moreover, the dummy variable *MAinEnglish* takes value 1 if individuals get a MA in English, and 0 otherwise. I also consider high school and BA final grades, and I collect detailed information on the educational level and occupation of the parents. Moreover, I construct an indicator variable, called *SameRegion*, taking value 1 if students are resident in the same region in which the university is located, while 0 if regions are different. Data allow also to observe both BA and MA university and disciplinary areas, as well as birth and residence regions. Section (5) reports sample descriptive statistics.

[12]The number of observation is net of foreign students. Those observations were dropped from the sample to avoid biases in the estimation of the working abroad probability. Moreover, I remove from the sample National Defense and Law disciplinary areas because are structured differently from BA and MA, and so do not allow for identification of the phenomenon. With respect to the disciplinary area of Medicine, I remove exclusively full-cycle degrees in Medicine and Surgery and Dentistry that lasts 6 years, whereas I keep all others fields structured in BA and MA (i.e., technical health professions, nursing, obstetrician, nutritional sciences). Finally, I do not consider the Université de la Vallée D'Aoste for its multilingual didactic feature (i.e., Italian, French, and English) that may affect the results of this work. However, students from Aosta Valley observed in the sample were very few (less than 500 observations).

[13]AlmaLaurea does not consider individuals involved in remunerated activities of training (i.e., internship, stage, specialization school, PhD, etc.) as employed. For this reason, all the information on the graduates' working status (i.e., type of contract, type and location of the job, the sector of employment, etc.) are not available for individuals involved in those training activities. Therefore, such individuals are treated as zeros in the definition of the variable *WorkAbroad*.

4 Identification Strategy

In order to scrutinize the relationship between MA in English and working abroad, I estimate the following equation:

$$WorkAbroad_i = \beta_0 + \beta_1 MAinEnglish_i + \beta_2 X_i + \beta_3 UBA_i + \beta_4 UMA_i + \\ + \beta_5 DBA_i + \beta_6 DMA_i + \beta_7 Cohort_i + \mu_i \quad (1)$$

The variables *WorkAbroad* and *MAinEnglish* are the two dummy variables described in the previous section that identifies graduates working abroad and that have studied in English, respectively. The vector X includes a set of individual characteristics such as gender, age, parents' educational level, parents' work status, and the variable *SameRegion* to partially capture unobservable propensity to migrate. Moreover, it includes a complete set of dummies controlling for the born region, the residence region, BA and high school final grades to partially capture individual unobservable ability or motivation, since students with better performances are usually highly characterized by those features (Sorrenti, 2017). I also include the logarithm transformation of the unemployment rate and GDP, considered at the provincial and regional level,[14] respectively (Oreopoulos et al., 2012). Finally, I include a set of control dummies for graduates' university of the Bachelor (UBA_i) and of the Master of Arts (UMA_i), disciplinary area of the BA (DBA_i) and of the MA (DMA_i), and cohorts of graduation ($Cohort_i$).

Even though I control for many observable characteristics, however, there is empirical evidence in the sample of existing differences between graduates working abroad and working in Italy. Many sources of this heterogeneity (e.g.,

[14] Time series data on unemployment rates and GDP comes from the Italian National Statistic Institute (ISTAT) and are related to the location of the study. Source: http://dati.istat.it.

propensity to migrate, ability, and ambition) are likely to be unobservable and related both to the choice of studying in English and the choice of working abroad producing a biased estimation of the coefficient β_1 whether OLS estimations are performed. For this reason, I adopt an instrumental variable approach to estimate the causal relation of interest.

First stage equation:

$$MAinEnglish_i = \delta_0 + \delta_1 Intro_i + \delta_2 X_i + \delta_3 UBA_i + \delta_4 UMA_i + \\ + \delta_5 DBA_i + \delta_6 DMA_i + \delta_7 Cohort_i + \varepsilon_i \quad (2)$$

where *Intro* represents the instrumental variable, while control variables are the same as in Equation (1).

I use the introduction of a MA in English (*Intro*) as an instrument for the variable *MAinEnglish* in order to estimate the local average treatment effect (Imbens and Angrist, 1994; Angrist et al., 1996). In particular, the variable *Intro* is a dummy variable taking value 1 for those graduates who experienced the introduction of a MA in English in their university and in their disciplinary area while they were enrolled in the BA.[15] The instrument is equal to zero if students were never exposed to the introduction of a MA in English, or if there were already existing MA in English when they enrolled in the first cycle degree program. According to this measure, students exposed to the introduction of a MA in English are intended to be treated. Furthermore, the instrument is built

[15]Since the information on language is available only from 2008, in order to avoid measurement errors in the construction of the instrument, I contact the presidents of the executive boards of all the English MA programs activated in the reform transition period (2008-2010) to know if the course was already given in English under the old sorting. The response rate is approximately 75 percent. Moreover, I recover the remaining information looking at the old MA regulation, using the Google way-back machine getting access to the old administrative documents of MA. Among controlled MA in English only a few of them were already existing under the old sorting, and for them, the year of introduction is set before 2008 according to the recovered information.

considering a window of four years from the time of enrollment in the BA.[16]

Then,

$$Intro_i = \begin{cases} 1 & \text{if MA in English introduced in 4 years from enrollment to BA;} \\ 0 & \text{otherwise.} \end{cases}$$

Even though universities decide to introduce a new degree program looking at the market, however, students randomly face the introduction of the MA at a particular point in time that is unlikely to be predictable.

Finally, I estimate the second stage equation:

$$WorkAbroad_i = \gamma_0 + \gamma_1 \widehat{MAinEnglish}_i + \gamma_2 X_i + \gamma_3 UBA_i + \gamma_4 UMA_i + \\ + \gamma_5 DBA_i + \gamma_6 DMA_i + \gamma_7 Cohort_i + \psi_i \quad (3)$$

where the parameter γ_1 identifies the causal relation of interest.

I assume that the introduction of a MA in English is unrelated to changes in students' expected ability in the major-university group and discipline. The argument in favor of this assumption is that the primary university's intent of introducing a MA in English is to be competitive on the Italian and European university market also attracting international students. This intent seems to be unrelated to students' changes in ability. Moreover, I assume that students exposed to the introduction do not exert extra efforts during BA in order to apply to the MA in English. This assumption is supported by the fact that in general MA in English, for the period of analysis, do not have special entry re-

[16] Results go through also with the three years window (BA legal duration), and there are small differences between these approaches. However, the four years option is more realistic for this dataset. In Italy, the average completion time of the study is above the European average (Bratti et al., 2010; Billari and Tabellini, 2010; Garibaldi et al., 2012), and it is approximately 4 years for the BA (EP, 2015).

quirements different from similar MA on the same subject offered in the Italian language. In general, the main entry requirement is to have a BA in the same discipline and a basic knowledge of the English language (level B2) that usually does not have to be supported by an official certificate, but it is internally verified by the MA executive board.[17] Moreover, this assumption supports the idea that a potential selection into subjects occurs at the Bachelor level and not at the time of MA enrollment. Finally, the instrument is defined under a weak monotonicity assumption since it is equal to 0 also for those students who enrolled in their BA in a university that was already offering a MA in English. I choose to estimate the model (3) under this weak monotonicity assumption since it is more realistic for this sample (Manski, 1997; Manski and Pepper, 2009). However, in section (6.3) I provide two specific robustness checks that fulfill strong monotonicity and allow to test the coefficient for this change in the assumption.

5 Descriptive Statistics

Table (2) reports descriptive statistics on the subgroups defined by the instrument that covers the 14.5 percent of the sample. Approximately, the 3 percent of graduates work abroad one year after graduation, and roughly the 50 percent is employed,[18] and the 2.3 percent of graduates has a MA in English. The fraction of graduates in English is relatively small because we observe graduates on the period 2010-2015 that relates approximately to the smoother supply period 2008-2013 showed in Figure (1). Moreover, the variables referring to high

[17] This scenario might be different for private universities that somehow show more challenging requirements for MA in English. However, this sample does not take into consideration Italian private institutes.

[18] Individuals involved in remunerated activities of training or education are not considered as employed in the AlmaLaurea survey. Employment statistic, according to the ISTAT definition that includes those categories of activity, rises approximately by 15 percentage points.

school and BA final grades[19] show that treated individuals performed slightly better in the high school and slightly worse in the BA, when compared to the control group. Finally, roughly 17 percent of the sample have university graduate parents and the majority of parents report the working status as employee. Whereas there are sharp differences between parents in the proportion of self-employed. In particular, only the 10.8 percent of mothers are self-employed in contrast with the 27.7 percent showed by fathers.

I compute sample tests on instruments to verify the random distribution of graduates' characteristics in the subgroups defined by the treatment. First, I compute a balance test (Column 4, Table (2)) regressing each variable on the instrument, including all the controls described in Equation (1). Test results show that except for the age variable all other individual characteristics do not show statistically significant differences between the two subgroups, and are almost close to zero.[20] Individuals result to be younger in the treatment subgroup, with an average of 25 years old with respect to the 26 average observed in the control group. Second, I compute a randomization test (Column 5, Table (2)) regressing the instrument (*Intro*) on the full set of controls. In particular, I implement the Wald test on each coefficient for the hypothesis of being equal to zero. Also the randomization test performs well on the overall set of controls. In particular, Wald F-statistics are above 10 points exclusively for the age characteristics, according also to the balance test result, and for the variable identifying graduates in English. The latter result is in line with the fact that universities introduce MA in English looking at the market. However, from the student perspective, the introduction of a MA in English occurs randomly at a particular point in time.

[19] In Italy, the high school final grade is measured out of 100 points, and the university degree final grade is out of 110 points.

[20] Balance test results for the variables *Work Abroad* and *MA in English* may be interpreted as the reduced form and the first stage estimates, respectively.

Table 2: Descriptive Statistics and Sample Tests on Instrument

Variable	Whole Sample	Introduction = 0	Introduction = 1	Balance Test	Randomization Test
Introduction of MA in English	0.145	0.000	1.000		
	(0.352)	(0.000)	(0.000)		
Work Abroad	0.029	0.027	0.036	0.003**	0.57
	(0.167)	(0.163)	(0.187)	(0.001)	(0.452)
Employed	0.540	0.526	0.624	0.006	0.10
	(0.498)	(0.499)	(0.484)	(0.006)	(0.752)
MA in English	0.023	0.016	0.064	0.027***	11.66***
	(0.150)	(0.125)	(0.245)	(0.007)	(0.001)
Female	0.591	0.612	0.471	0.005	1.03
	(0.492)	(0.487)	(0.499)	(0.005)	(0.312)
Age	26.055	26.180	25.317	-0.399***	16.91***
	(2.794)	(2.899)	(1.909)	(0.078)	(0.000)
Same Region (uni-home)	0.729	0.729	0.723	-0.000	5.22**
	(0.445)	(0.444)	(0.448)	(0.000)	(0.023)
Mother's Education:					
Graduate	0.165	0.161	0.188	0.001	0.24
	(0.371)	(0.367)	(0.391)	(0.002)	(0.622)
High School	0.407	0.402	0.432	-0.001	0.00
	(0.491)	(0.490)	(0.495)	(0.003)	(0.980)
Lower Secondary	0.221	0.221	0.220	0.002	0.61
	(0.415)	(0.415)	(0.414)	(0.003)	(0.434)
Missing Mother's Education	0.145	0.149	0.121	0.001	1.29
	(0.352)	(0.356)	(0.326)	(0.001)	(0.257)
Father's Education:					
Graduate	0.181	0.176	0.213	0.003	1.26
	(0.385)	(0.381)	(0.409)	(0.003)	(0.262)
High School	0.381	0.379	0.397	-0.002	0.16
	(0.486)	(0.485)	(0.489)	(0.004)	(0.690)
Lower Secondary	0.232	0.233	0.226	0.001	0.24
	(0.422)	(0.422)	(0.418)	(0.003)	(0.625)
Missing Father's Education	0.143	0.147	0.119	0.001	0.99
	(0.350)	(0.355)	(0.324)	(0.001)	(0.552)
Mother's Work Status:					
Self-employed	0.108	0.106	0.125	0.001	0.36
	(0.311)	(0.307)	(0.331)	(0.002)	(0.552)
Employee	0.491	0.479	0.562	0.002	0.30
	(0.500)	(0.500)	(0.496)	(0.004)	(0.583)
House Worker	0.238	0.247	0.182	-0.001	0.50
	(0.426)	(0.431)	(0.386)	(0.003)	(0.481)
Missing Mother's Work Status	0.163	0.168	0.131	0.000	1.11
	(0.369)	(0.374)	(0.337)	(0.000)	(0.293)
Father's work type:					
Self-employed	0.277	0.272	0.307	0.005	0.28
	(0.448)	(0.445)	(0.461)	(0.004)	(0.597)
Employee	0.561	0.561	0.564	-0.004	0.70
	(0.496)	(0.496)	(0.496)	(0.004)	(0.405)
House Worker	0.004	0.005	0.003	0.000	0.23
	(0.067)	(0.068)	(0.054)	(0.000)	(0.632)
Missing Father's Work Status	0.157	0.162	0.127	-0.001	1.39
	(0.364)	(0.369)	(0.333)	(0.001)	(0.238)
Graduates' Final Grades:					
High School Final Grade	84.949	84.807	85.786	-0.277	1.17
	(12.004)	(12.001)	(11.983)	(0.189)	(0.281)
Missing HS Final Grade	0.040	0.045	0.013	-0.002	0.60
	(0.197)	(0.207)	(0.115)	(0.002)	(0.439)
BA Final Grade	101.519	101.796	99.886	0.039	0.00
	(7.381)	(7.242)	(7.959)	(0.190)	(0.995)
Missing BA Final Grade	0.000	0.001	0.000	-0.000*	3.48*
	(0.022)	(0.023)	(0.013)	(0.000)	(0.063)
Observations	242070	206998	35072	242070	242070

Note: The table contains sample means and standard deviations in parenthesis. All the variables are dummies excepting for age, high school grade, and BA grade that are linear. Missing values high school and BA final grades have been replaced with sample means. Balance test is computed regressing each variable on the instrument, including all the controls described in Equation (1). Randomization is computed regressing the instrument on the full set of controls, the table reports Wald test F-statistics and p-values in parenthesis, of the hypothesis that each coefficient is equal to zero. This process has been implemented multiple times to take into account also reference group variables. *, **, *** indicate statistical significance at 10%, 5%, and 1% level, respectively.

6 Results

Tables of results presented in this section have all the same structure. I report eight columns of estimations gradually adding controls and fixed effects to test the sensitiveness of the parameter of interest.[21] First, I show OLS and first stage results in section (6.1). Second, I present instrumental variable estimates in section (6.2). Finally, (6.3) describes the sensitivity analyses. Reduced form results are reported and discussed in Appendix (A).

6.1 OLS and First Stage Results

Table (3) shows the OLS results and in particular, the last column (8) refers to the specification described by the Equation (1). The OLS estimate[22] for the parameter β_1, including all controls, suggests an increase of 8.3 percentage points in the probability of working abroad one year after graduation for those who graduate in English. The result is strongly and statistically significant for each specification and the parameter is robust to the introduction of controls and fixed effects. In this sense, the magnitude of the parameter slightly decreases from 0.09 to 0.083, from the first specification without controls to the one described by the Equation (1) in column (8). Focusing on control variable estimates, *Female* and *Age* variables show small and negative effects in the probability of working abroad, whereas highly educated parents play a positive role on that.

[21] For all the model specifications presented in this section, I consider high school as the parental education reference group and houseworker as parental work status reference group. Standard errors are clustered at MA disciplinary area and university (541 clusters). Specifically, I use a variable that uniquely identifies graduates into the combination of the two different dimensions observed in the sample (Cameron and Miller, 2015). Moreover, model F-statistic on overidentification test is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies or alternatively, when I stratify the sample in order to implement the sensitivity analyses, the full set of FE, namely cohorts, universities, fields, regions and final grades (Frisch and Waugh, 1933; Lovell, 1963, 2008; Giles, 1984; Giles et al., 2011).

[22] The binary feature of several variables puts a limit to the estimation of the model using non-linear probability models (e.g., IV Probit). However, this work investigates local average causal effect, and 2SLS is accurate and appropriate for this purpose (Freedman and Sekhon, 2010; Angrist and Pischke, 2008).

Table 3: OLS Estimates

Dep. Variable: Work Abroad	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MA in English	0.090***	0.087***	0.085***	0.084***	0.083***	0.084***	0.083***	0.083***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Individual Characteristics:								
Same Region (uni-home)			-0.017***	-0.017***	-0.017***	-0.017***	-0.017***	-0.017***
			(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Female				-0.009***	-0.009***	-0.009***	-0.009***	-0.009***
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age				-0.005***	-0.004***	-0.004***	-0.001	-0.002*
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age squared				0.000***	0.000***	0.000***	0.000	0.000
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mother's Education:								
Graduate					0.005***	0.005***	0.005***	0.005***
					(0.001)	(0.001)	(0.001)	(0.001)
Lower Secondary					-0.000	-0.000	-0.000	-0.000
					(0.001)	(0.001)	(0.001)	(0.001)
Father's Education:								
Graduate					0.003***	0.003***	0.003***	0.003**
					(0.001)	(0.001)	(0.001)	(0.001)
Lower Secondary					-0.004***	-0.004***	-0.004***	-0.004***
					(0.001)	(0.001)	(0.001)	(0.001)
Mother's Work Status:								
Self-employed					0.005***	0.005***	0.005***	0.005***
					(0.001)	(0.001)	(0.001)	(0.001)
Employee					0.001*	0.001*	0.001*	0.001
					(0.001)	(0.001)	(0.001)	(0.001)
Father's Work Status:								
Self-employed					-0.004	-0.004	-0.004	-0.004
					(0.005)	(0.005)	(0.005)	(0.005)
Employee					-0.004	-0.004	-0.005	-0.005
					(0.005)	(0.005)	(0.005)	(0.005)
Unemployment Rate in logs.						0.001	0.001	0.001
						(0.004)	(0.004)	(0.004)
GDP per capita in logs.						-0.040*	-0.040	-0.039
						(0.024)	(0.025)	(0.024)
Fixed Effects:								
Cohort		✓	✓	✓	✓	✓	✓	✓
BA University		✓	✓	✓	✓	✓	✓	✓
BA Disciplinary Area		✓	✓	✓	✓	✓	✓	✓
MA University		✓	✓	✓	✓	✓	✓	✓
MA Disciplinary Area		✓	✓	✓	✓	✓	✓	✓
Control Dummies:								
Born Region			✓	✓	✓	✓	✓	✓
Residence Region			✓	✓	✓	✓	✓	✓
BA Final Grade							✓	✓
High School Final Grade								✓
Observations	242070	242070	242070	242070	242070	242070	242070	242070
F-stat	74	237	165	176	200	193	285	416

Note: Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Standard errors are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

In particular, this is the case of university graduate parents that results to have a positive effect, even if small, on the phenomenon of analysis. On contrary, a negative effect is shown by fathers with a lower secondary education level. Furthermore, looking at the parent's work status estimates, I find a positive effect on the probability of working abroad only via the coefficient of mothers' work status. Even though I obtain highly significant and stable results for the parameter β_1 and for many other control variables, however, OLS estimates are biased by endogenous factors affecting both the choice of studying in English and of working abroad. For this reason, I adopt an instrumental variable approach using the introduction of a MA in English during the period of the BA as an instrument for studying in English as described in section (4). Table (4) reports the first stage estimates, providing the validity of the instrument in describing the endogenous variable.

Table 4: First Stage Estimates

Dep. Variable: MA in English	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Introduction of MA in English	0.048***	0.029***	0.029***	0.028***	0.028***	0.027***	0.027***	0.027***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Individual Characteristics				✓	✓	✓	✓	✓
Parents' Education					✓	✓	✓	✓
Parents' Work Status					✓	✓	✓	✓
Unemployment Rate & GDP (logs)						✓	✓	✓
Fixed Effects		✓	✓	✓	✓	✓	✓	✓
Control Dummies:								
Born Region			✓	✓	✓	✓	✓	✓
Residence Region			✓	✓	✓	✓	✓	✓
BA Final Grade							✓	✓
High School Final Grade								✓
Observations	242070	242070	242070	242070	242070	242070	242070	242070
F-stat	45	955	1085	1153	1735	1848	3570	7005
F-stat of Excluded Instrument	45.08	15.41	15.86	14.57	14.47	14.46	14.52	14.55

Note: Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. Fixed effects include dummies on Cohort of graduates, BA and MA university and disciplinary area. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors do not change from OLS; results are available upon request. Standard errors are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.

The instrument provides a strong description of studying in English with a 2.7 percentage points increase in the probability of getting a MA in English for those who were exposed to the introduction of this program while enrolled in the BA (Table (4), column (8)). The effect is positively strong when compared to the sample average probability of studying in English (2.3 percent) that more than doubles for the effect of the intention to treat. Results are strong in all specifications with F-statistics of excluded instrument always above 10 points.

6.2 Second Stage Results

Table (5) presents the results of the instrumental variable estimates as described by the Equation (3) in column (8), gradually adding controls.

Table 5: Instrumental Variable Estimates

Dep. Variable: Work Abroad	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MA in English	0.184***	0.140***	0.145***	0.121***	0.119***	0.119***	0.114**	0.113**
	(0.051)	(0.049)	(0.048)	(0.046)	(0.045)	(0.045)	(0.045)	(0.045)
Individual Characteristics				✓	✓	✓	✓	✓
Parents' Education					✓	✓	✓	✓
Parents' Work Status					✓	✓	✓	✓
Unemployment Rate & GDP (logs)						✓	✓	✓
Fixed Effects		✓	✓	✓	✓	✓	✓	✓
Control Dummies:								
Born Region			✓	✓	✓	✓	✓	✓
Residence Region			✓	✓	✓	✓	✓	✓
BA Final Grade							✓	✓
High School Final Grade								✓
Observations	242070	242070	242070	242070	242070	242070	242070	242070
F-stat	13	284	163	189	204	196	290	486
F-stat of Excluded Instrument	45.08	15.41	15.86	14.57	14.47	14.46	14.52	14.55

Note: Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Coefficient estimates and standard errors do not change from OLS; results are available upon request. Standard errors are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.

I find positive and statistically significant results for the parameter γ_1 of the instrumented variable *MAinEnglish*, showing an overall increase of 11.3 per-

centage points (Table (5), column (8)) in the probability of working abroad after one year from graduation, and the result is closed in magnitude to the corresponding OLS estimate. This result is large when compared to the sample average of working abroad individuals (around 3 percent): the probability increases almost fivefold for those with a MA in English. Moreover, fixed effects, control dummies on the born and residence region, and individual characteristics are those that decrease more the magnitude of the effect (Table (5, columns (1)-(4)). Indeed, the coefficient is quite stable in the estimates reported from column (5) to (8) in Table (5).

This result suggests that studying in English has a strong causal effect on graduates' labour market mobility. Moreover, it provides evidence that fostering international degrees in English is a powerful instrument to stimulate international labour mobility.

6.3 Sensitivity Analyses: Instrument and First Stage

I provide several robustness checks for the parameter γ_1. In particular, I restrict the sample excluding individuals with features that might inflate the magnitude of the coefficient or its standard error.

Primarily, since I defined the instrument under a weak monotonicity assumption, I run the model with a different composition of the sample and a new instrument definition that fulfill strong monotonicity. In particular, at first I remove from the sample individuals that enroll in the BA with already existing MA in English in the subject and university they apply for.[23] Second, I build an instrument that is equal to one also for those enrolled in the BA with MA in English already in place (voluntarily introducing endogeneity in the instrument

[23]The instrument, *Intro*, as defined in section (4) is equal to zero also for individuals enrolled in the BA with already existing MA in English.

to test standard errors). Table (6) reports results on the strong monotonicity assumption: column (1) restricts the sample and column (2) tests the new instrument. Results go through in both cases with a slight reduction in the magnitude of the coefficient that becomes sharper under the new endogenous instrument. Moreover, by construction, the F-statistic of the excluded instrument is more powerful under strong monotonicity.[24]

Table 6: Robustness Check: Strong Monotonicity

Dep. Variable: Work Abroad **Estimation Method:** IV	(1)	(2)
MA in English	0.093***	0.077***
	(0.029)	(0.022)
Robustness Check:		
Restricted Sample for Strong Monotonicity	✓	
Instrument under Strong Monotonicity		✓
Observations	232581	242070
F-stat	1305	415
F-stat of Excluded Instrument	47.22	42.04

Note: All column estimations refer to specification 8 that includes all the fixed effects described above. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.

Secondly, since the instrument considers exclusively the first year in which, for a specific field and university, was introduced a MA in English, it is reasonable to think that the power of the instrument is initially increasing in time and subsequently decreasing. In order to test this intuition on the mechanism through which the instrument operates, I estimate the model on groups of cohorts of graduates. More specifically, I estimate the model on the subsamples of

[24]One caveat about the restricted sample (232581 obs.) that fulfills strong monotonicity is that it is slightly unbalanced on some parental characteristics. This made prudent the choice of relaxing the monotonicity assumption in the main analysis.

cohorts 2010-2011, 2012-2013 and 2014-2015 as shown in Table (7). Results are significant exclusively for the central cohorts (i.e., 2012-2013) and as shown by the F-statistics on the excluded instrument, the first stage is increasing in power from 2010-2011 to 2012-2013 and it is decreasing in power from 2012-2013 to 2014-2015, even if in the latter case it shows an F-statistic on instrument above 10 points.

Table 7: Robustness Check Estimates on Cohorts of Graduates

Dep. Variable: Work Abroad	**Sample of Cohorts** 2010-2011 (1)	2012-2013 (2)	2014-2015 (3)
MA in English	0.076	0.130*	0.088
	(0.358)	(0.070)	(0.062)
Observations	31298	98990	111782
F-stat	5	10	12
F-stat of Excluded Instrument	2.98	22.32	11.78
Clusters	411	534	540

Note: Instrumental Variable estimates. All column estimations refer to specification 8 that includes all the fixed effects described above. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

Furthermore, since the availability of degrees in English differs subject by subject, I test the coefficient by removing disciplinary areas one at a time. Table (8) shows these results. Results on subjects are robust for all sample restrictions excepting for the case of Engineering (Table (8), column (5)) that reports a drop in the magnitude of the coefficient and a lack of statistical significance. However, in contrary with the previous case, this result is driven by the reduced form that is no more highly significant and also by the first stage that shows an F-statistic of instrument below 10 points. This is due to the fact that Engineering is the subject that experienced the highest increase in the supply of MA in

English as represented in Figure (2) and that in general this field is more oriented to international career paths. However, statistical significance is close to 10 percent level. Furthermore, all other restrictions are highly robust, and standard errors do not seem to be inflated by fields that have not introduced MA in English. In particular, coefficient estimates are always around 11 percentage points and also standard errors are stable at the same level observed for the result showed in Table (5).

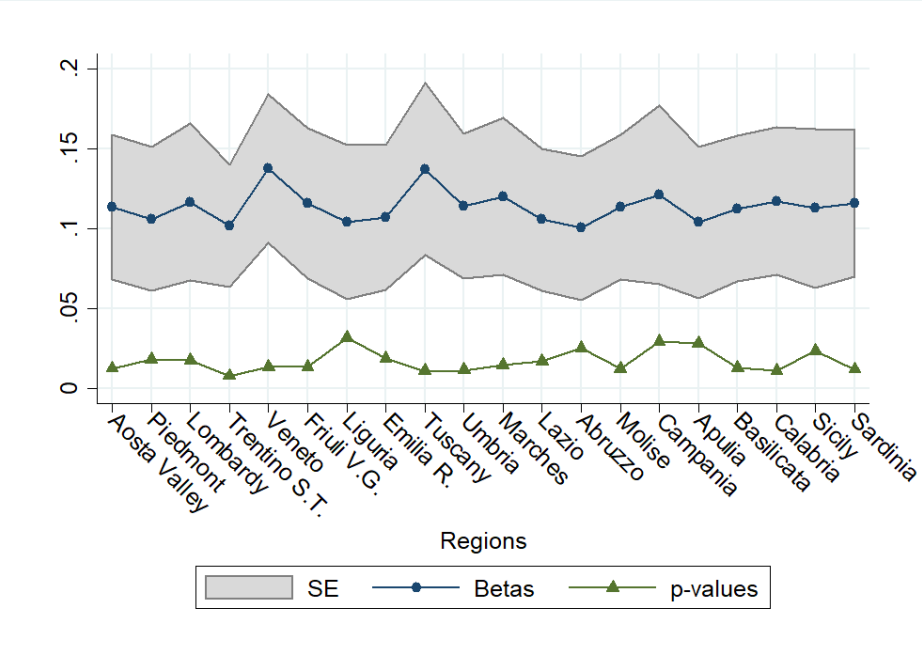
Table 8: Robustness Check Estimates on Disciplinary Areas

Dep. Variable: Work Abroad	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MA in English	0.106**	0.118**	0.129**	0.112**	0.084	0.120**	0.120***
	(0.045)	(0.048)	(0.052)	(0.045)	(0.052)	(0.059)	(0.045)
Removed Subjects:							
Scientific	✓						
Chemical-Pharmaceutical		✓					
Geo-Biological			✓				
Medicine				✓			
Engineering					✓		
Architecture						✓	
Agriculture-Veterinary							✓
Observations	232603	238079	220940	238399	204955	232088	237033
F-stat	15	15	15	15	12	14	15
F-stat of Excluded Instrument	17.10	13.66	11.39	14.52	8.57	12.49	14.32
Clusters	503	509	492	506	497	517	519
Dep. Variable: Work Abroad	(8)	(9)	(10)	(11)	(12)	(13)	(14)
MA in English	0.136***	0.086**	0.119**	0.134***	0.109**	0.106**	0.111**
	(0.051)	(0.043)	(0.050)	(0.047)	(0.046)	(0.045)	(0.045)
Removed Subjects:							
Economics-Statistics	✓						
Political-Social		✓					
Literary			✓				
Linguistic				✓			
Education					✓		
Psychological						✓	
Physical Education							✓
Observations	194993	212845	214380	228114	235157	219688	237636
F-stat	11	13	15	14	15	17	15
F-stat of Excluded Instrument	12.17	13.11	12.46	12.11	13.65	14.29	14.93
Clusters	486	487	487	496	511	512	511

Note: All column estimations refer to the specification that includes all fixed effects and controls. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively. P-value of the estimated *MA in English* referring to the removed subject of Engineering is 0.109.

Moreover, since the probability of working abroad is heterogeneous among Italian regions and the northern regions are the only ones closed to the European borders, I test the coefficient of interest by removing regions of study one at a time. Figure (3) provides a graphical representation of these results that are robust for all the sample restrictions. Changes in the magnitude of the coefficient are almost flat, and statistical significance is always below 5 percent level.

Figure 3: Robustness Check on Regions of Study



Note: Graph reports IV estimates computed on the full model specification provided by Equation (1). Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. Results on Aosta Valley are the same reported in column (8) of Table (5), so can be taken as a benchmark.

Finally, I also test the results by removing individuals who switch university or field from BA to MA. The instrument does not keep track of these movements in order to avoid endogeneity. However, it is important to test how the coefficient of interest reacts by removing these groups of individuals from the sample. Table (9) shows these results. In particular, I remove from the sample the following groups of individuals: university switchers (Column (1)), field switchers (Column (2)), individuals who changed both university and field from BA to MA (Column (3)) at the same time (i.e., the intersection of the previous two groups), individuals who changed university but keeping the same field of study (Column (4)), graduates who changed field of study but staying at the same university (Column (5)) and finally, graduates who changed either university or field (i.e., the union of the two groups of switchers; Column (6)). Results seem to be not affected at all by these factors and this also strengthen the validity of the instrument.

Table 9: Estimations on University and Field Switchers

Dep. Variable: Work Abroad	(1)	(2)	(3)	(4)	(5)	(6)
MA in English	0.102**	0.108**	0.107**	0.106***	0.115**	0.104**
	(0.040)	(0.045)	(0.045)	(0.041)	(0.046)	(0.041)
Removed Switchers:						
University	✓					
Field		✓				
University and Field (intersection)			✓			
University in the Same Field				✓		
Field in the Same University					✓	
University or Field (union)						✓
Observations	197490	223837	234649	204911	231258	186678
F-stat	12	13	14	13	14	11
F-stat of Excluded Instrument	17.93	15.76	14.73	17.72	15.35	18.97
Clusters	541	536	541	541	539	528

Note: All column estimations refer to the specification that includes all fixed effects and controls. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.

6.4 Sensitivity Analyses: Subpopulations of Graduates

I estimate the model on subpopulations of graduates for which the effect of interest might be more prevalent. In particular, at first I consider the subsample of grads in Science, Technology, Engineering and Mathematics (STEM), and in No-STEM fields to see if the effect is prevalent for scientific or humanistic disciplines. Secondly, I use the Quacquarelli Symonds International Ranking (QS-Ranking) to identify graduates coming from the top ten Italian universities to check if part of the effect comes from the best institutions.[25] Finally, I divide the sample into the following geographic areas: north, center and south of Italy to analyse more in depth the geographical differences at country level.[26] Tables (10), (11) and (12) show these results, respectively.

On the one hand, I find that the effect of studying in English on working abroad one year after graduation is particularly relevant for STEM graduates whereas I do not find statistically significant results for the subpopulation of graduates in No-STEM fields. The lack of a significant effect for No-STEM grads is driver by the scarce interest in international career path shown by these fields (reduced form) and by the small supply of MA in English for these disciplines (first stage). This provides empirical evidence on the fact that fields related to jobs that are more required on the international labour market are also those that seem to benefit more from the introduction of MA in English in this sense.

[25] I use the QS International ranking of Italian universities for each year in the period 2010-2015. The ranking is built by adopting the following criterion and weights: academic reputation (40%), citation per faculty (20%), faculty student ratio (20%), employer reputation (10%), international student ratio (5%) and international faculty ratio (5%) . I select the best 10 Italian universities for each year in the period 2010-2015. Data on the year 2014 are missing, however the pool of the top 10 institutions does not change from 2013 to 2015 (even if with some internal changes), so data for 2014 have been replicated with those of 2015 without loss of generality. Source: https://www.universityrankings.ch. The website is a joint project of the State Secretariat for Education, Research and Innovation (SERI) and Swiss Universities.

[26] The subsample of grads coming from the south includes also Italian islands according to the so-called national definition of "mezzogiorno". Subsamples are defined according to the ISTAT definition: http://dwcis.istat.it/cis/docs/4-8.htm.

Table 10: Estimations on STEM Subpopulations

	STEM				No-STEM			
Dependent Variable:	Work Abroad	Work Abroad	MA in English	Work Abroad	Work Abroad	Work Abroad	MA in English	Work Abroad
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Estimation:	**OLS**	**Reduced Form**	**First Stage**	**IV**	**OLS**	**Reduced Form**	**First Stage**	**IV**
Introduction of MA in English		0.004**	0.035***			0.001	0.013*	
		(0.002)	(0.013)			(0.002)	(0.007)	
MA in English	0.075***			0.126**	0.093***			0.104
	(0.014)			(0.053)	(0.013)			(0.123)
Mean Dependent Variable	0.030	0.030	0.033	0.030	0.028	0.028	0.017	0.028
Observations	84220	84220	84220	84220	157850	157850	157850	157850
F-stat	9	10	3	9	14	10	4	11
F-stat of Excluded Instrument	-	-	7.05	7.05	-	-	3.30	3.30
Clusters	232	232	232	232	370	370	370	370

Note: Columns refer to OLS, reduced form, first stage, and instrumental variable estimation, respectively, and are divided by STEM subpopulations. These specifications include all the fixed effects described above. Parental work type reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Standard errors are reported in parenthesis and are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

On the other hand, when I split the sample for graduates coming from the top universities, I find that studying in English has an effect only for students that are not graduated at one of the top ten institutions. This result is particularly interesting when related to the sample averages of working abroad graduates in the two subgroups. Graduates from top universities are 0.4 percentage points more mobile than their counterparts and show no effect on the probability of working abroad for studying in English, whereas graduates not coming from the top institutions almost triplicates their probability of working abroad. These results suggest that MA in English improve the competitiveness of graduates not coming from top universities on the international labour market, and provide evidence that the university strategy that aims at being more competi-

tive by introducing MA in English is somehow effective. Other possible interpretations of these results might be that coming from one of the best university is a good signal *per se* to find job into the national labour market with no needs of moving abroad for labour purposes, or that grads from top universities keep staying in education one year after the end of the study (i.e., masters, phd, etc.) and so they postpone their migration choice. However, even if these intuitions are reasonable and relevant in terms of implications, they can not be directly inferred from the results shown in Table (11).

Table 11: Estimations on the Best and the Not-Best Universities

	Best Universities				**Not-Best Universities**			
Dependent Variable:	Work Abroad	Work Abroad	MA in English	Work Abroad	Work Abroad	Work Abroad	MA in English	Work Abroad
Estimation:	(1a) **OLS**	(2a) **Reduced Form**	(3a) **First Stage**	(4a) **IV**	(1b) **OLS**	(2b) **Reduced Form**	(3b) **First Stage**	(4b) **IV**
Introduction of MA in English		0.001	0.013**			0.004**	0.042***	
		(0.002)	(0.005)			(0.002)	(0.014)	
MA in English	0.094***			0.047	0.074***			0.107**
	(0.017)			(0.136)	(0.010)			(0.043)
Mean Dependent Variable	0.031	0.031	0.022	0.031	0.027	0.027	0.024	0.027
Observations	97923	97923	97923	97923	144147	144147	144147	144147
F-stat	14	9	7	9	11	9	4	9
F-stat of Excluded Instrument	-	-	5.79	5.79	-	-	9.10	9.10
Clusters	118	118	118	118	458	458	458	458

Note: All column estimations refer to the specification that includes all fixed effects and controls. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.

Finally, I estimate the model on the subsamples of graduates coming from universities located in the north, in the center or in the south of Italy as shown in Table (12). I find a positive and statistically significant effect exclusively for graduates from the south: the probability of working abroad one year after

graduation increases almost sixfold with respect to the sample average. This result is impressive for its magnitude and also for the fact that it provides empirical evidence on the strong emigration feature of the southern Italian regions as already emerged in the report published by the Italian Association for the Development of the Industry of the South (SVIMEZ): southern regions suffer from a strong emigration (to the northern regions or abroad) that is not compensated by the immigration; when this scenario is referred to high skilled migrants it reduces to a loss of human capital and in a loss in the public investment in education (SVIMEZ, 2018). Unfortunately, the south of Italy is also the part of the country that suffer mostly by unemployment, slow economic growth, corruption and low education level.

Table 12: Robustness Check Estimates on Geographical Areas

Dep. Variable: Work Abroad	**Goegraphic Area** North (1)	Center (2)	South (3)
MA in English	0.192	0.070	0.134**
	(0.159)	(0.069)	(0.054)
Mean Dependent Variable	0.036	0.028	0.017
Observations	108706	63106	70258
F-stat	8	10	6
F-stat of Excluded Instrument	2.47	11.48	7.32
Clusters	206	163	200

Note: Instrumental Variable estimates. All column estimations refer to specification 8 that includes all the fixed effects described above. Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors are available upon request. Standard errors are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

These results show that even though promoting the diffusion of MA in English is a good strategy to support labour mobility, however, when this is associated to particular and critical conditions of the labour market in specific regions

it might lead to an increase in the disparities between geographical areas of a country. In other words, the international mobility of southern graduates could translate into a brain drain if regions are not able to attract back individuals in their labour market. According to this scenario, from the student perspective, the introduction of a MA in English operates as a way out from bad labour market conditions at the territorial level, basically, graduates use the MA in English as a backup solution to emigrate and work abroad. On the other hand, from the university perspective, this is reduced in a deadweight loss for their investment in human capital in favour of foreign countries.

7 Tests for Selection Biases and External Validity

7.1 Test for Selection on the Probability of Working

The dependent variable, *WorkAbroad*, of the model equation (1) keeps track of individuals working abroad one year from graduation conditioned on the working status. For this reason, I estimate the model (1) using as a dependent variable the probability of working one year after graduation in order to test for selection bias in the definition of the dependent variable of interest of this work. Table (13) shows these estimations.

I do not find any statistically significant effect of studying in English on the probability of working *per se* and this provides no evidence of selection bias in the definition of the dependent variable *WorkAbroad*. Table (13) on column (1) shows a positive correlation between studying in English and working after the end of the studies (OLS estimate). However, the reduced form estimate (Column (2)) provides the first evidence of no causal relation between the two phenomena and this is also confirmed from the IV estimation (Column (4)).

Table 13: Estimations on the Probability of Working

Dependent Variable:	Working	Working	MA in English	Working
	(1)	(2)	(3)	(4)
Estimation:	**OLS**	**Reduced Form**	**First Stage**	**IV**
Introduction of MA in English		0.006	0.027***	
		(0.006)	(0.007)	
MA in English	0.253***			0.209
	(0.017)			(0.210)
Observations	242070	242070	242070	242070
F-stat	4576	4025	7005	13675
F-stat of Excluded Instrument	-	-	14.55	14.55

Note: Columns refer to OLS, reduced form, first stage, and instrumental variable estimation, respectively. These specifications include all the fixed effects described above. Parental work type reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Standard errors are reported in parenthesis and are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

Moreover, since studying in English may affect the probability of working differently for the STEM and No-STEM fields, I estimate the effect on the STEM subpopulations. Results are shown in Table (14) and suggest no evidence of causal relations between studying in English and the probability of working on both the subsample definitions related to STEM and No-STEM fields. In both cases, the reduced form estimates (Table (14), columns (2a) and (2b)) show the lack of causality that is also confirmed in the IV estimations (Columns (4a) and (4b)).

Table 14: Estimations on STEM Subpopulations on the Probability of Working

	STEM				**No-STEM**			
Dependent Variable:	Working	Working	MA in English	Working	Working	Working	MA in English	Working
Estimation:	(1a) **OLS**	(2a) **Reduced Form**	(3a) **First Stage**	(4a) **IV**	(1b) **OLS**	(2b) **Reduced Form**	(3b) **First Stage**	(4b) **IV**
Introduction of MA in English		0.010	0.035***			0.000	0.013*	
		(0.009)	(0.013)			(0.009)	(0.007)	
MA in English	0.264***			0.301	0.250***			0.026
	(0.033)			(0.216)	(0.015)			(0.687)
Observations	84220	84220	84220	84220	157850	157850	157850	157850
F-stat	20	18	3	17	49	35	4	35
F-stat of Excluded Instrument	-	-	7.05	7.05			3.30	3.30
Clusters	232	232	232	232	370	370	370	370

Note: Columns refer to OLS, reduced form, first stage, and instrumental variable estimation, respectively, and are divided by STEM subpopulations. These specifications include all the fixed effects described above. Parental work type reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Standard errors are reported in parenthesis and are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

7.2 Test for Conditional Independence and External Validity

When I implement an instrumental variable approach following the works of Imbens and Angrist (1994) and Angrist et al. (1996), IV estimates refer to the so-called Local Average Treatment Effect (LATE), namely the average causal effect on the subpopulation of compliers. However, in this framework of analysis, the size of this subpopulation is given by the impact of the IV on the probability of exposure: a small subpopulation as a matter of fact. For this reason, I test if the average impact I have found can be generalized to a wider population, providing external validity for the results presented above.

For this purpose, I implement the test for the Conditional Independence Assumption (CIA) proposed by Black et al. (2017) that allows me to test for selection biases on either or both of the treated and untreated outcomes and to provide a measure of the selection effect.[27] In particular, for this framework, let's divide agents in three mutually exclusive subpopulations as follows:

$$A = \{i : MAinEnglish_i(Intro_i = 1) = MAinEnglish_i(Intro_i = 0) = 1\}$$

$$N = \{i : MAinEnglish_i(Intro_i = 1) = MAinEnglish_i(Intro_i = 0) = 0\}$$

$$C = \{i : MAinEnglish_i(Intro_i = 1) = 1;\ MAinEnglish_i(Intro_i = 0) = 0\}$$

Where A stands for the subpopulation of *"Always Takers"*, N refers to *"Never Takers"*, and C to *"Compliers"*. $MAinEnglish$ and $Intro$ are the treatment and the instrument variables, respectively. Following the notation of Black et al. (2017), I test the CIA defined as:

$$Y_{0i} \perp\!\!\!\perp MAinEnglish_i | X \qquad (\text{CIA}^0)$$

[27] This test sinks its roots in the work of Heckman (1979) and subsequent works (Heckman and Vytlacil, 2005; Heckman et al., 2006, 2010). Relevant papers, among others that deal with selection bias, are those of Angrist (2004) and the ones of Battistin and Rettore (2008) and Bertanha and Imbens (2019) related to Regression Discontinuity Design (RDD) and Fuzzy RDD.

$$Y_{1i} \perp\!\!\!\perp MAinEnglish_i | X \qquad \text{(CIA}^1\text{)}$$

where Y_{1i} represents the *WorkAbroad* outcome of the i^{th} agent if treated and Y_{0i} the outcome if the i^{th} is not treated. In particular, (CIA^0) allows to estimate the average treatment effect on untreated (i.e., $E[Y_1 - Y_0 | MAinEnglish = 0]$), whereas (CIA^1) allows to estimate the average treatment effect on treated (i.e., $E[Y_1 - Y_0 | MAinEnglish = 1]$).

More in depth, I test these assumptions by estimating the following equations:

$$E[Y_{0i} | MAinEnglish_i = 0] = \alpha_0 Intro_i + \theta_0 X_i \qquad (4)$$

$$E[Y_{1i} | MAinEnglish_i = 1] = \alpha_1 Intro_i + \theta_1 X_i \qquad (5)$$

where in this case, for the sake of simplicity, the vector X includes both controls and fixed effects showed in the model equation (1).[28]

Formally, I estimate the equation (4) on the sample of untreated individuals to test:

$$\begin{aligned} &H^0 : CIA^0 \text{ holds, or } \alpha_0 = 0 \\ &H^A : CIA^0 \text{ fails, or } \alpha_0 \neq 0. \end{aligned} \qquad \text{(TEST}^0\text{)}$$

Comparably, I estimate the equation (5) on the sample of treated agents to test:

$$\begin{aligned} &H^0 : CIA^1 \text{ holds, or } \alpha_1 = 0 \\ &H^A : CIA^1 \text{ fails, or } \alpha_1 \neq 0 \end{aligned} \qquad \text{(TEST}^1\text{)}$$

[28] In simple words, with the equations (4) and (5), I estimate reduce form equations separately on the sample of untreated and on the sample of treated, respectively.

Basically, (TEST^0) allows me to test for selection bias by comparing *Compliers* with *Never Takers*, whereas (TEST^1) allows to compare *Compliers* with *Always Takers*. Moreover, I measure the selection bias using the formula proposed by Black et al. (2017):

$$B_0 = \frac{Pr(C) + Pr(N)}{Pr(C)}\alpha_0; \qquad B_1 = \frac{Pr(C) + Pr(A)}{Pr(C)}\alpha_1 \tag{6}$$

with $Pr(A) = Pr(MAinEnglish = 1|Intro = 0)$ and $Pr(N) = Pr(MAinEnglish = 0|Intro = 1)$.

Table 15: Test of CIA for External Validity

Dependent Variable:	Work Abroad Y_0 (UNTREATED)	Work Abroad Y_1 (TREATED)
	(1)	(2)
Estimation Method:	**OLS**	**OLS**
Introduction of MA in English	0.001	0.002
	(0.001)	(0.009)
Bias	0.0012	0.0016
Observations	236520	5550
F-stat	13	12

Note: These specifications include all the fixed effects described above. Parental work type reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. The bias is measure using *formulae* in equation (6). Standard errors are reported in parenthesis and are clustered at MA disciplinary area and university level. F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out all the FE (i.e., cohorts, universities, fields, regions and final grades). *, **, *** indicate statistical significance at 10%, 5% and 1% level, respectively.

Results are shown in Table (15): the data always accept the null hypothesis that α_0 or α_1 are equal to zero, providing no evidence of particular differences between the subpopulations of *Compliers*, *Never Takers* and *Always Takers*. Results are always not significant and economically close to zero.

I find these results stunning since I expected a two-sided selection bias. However, in this framework of analysis, the instrument is relatively weak in the sense that it provides a small number of *Compliers*. For this reason, as also suggested by Black et al. (2017), it implies a relatively low power for this test: "*...with a weak instrument, comparing the conditional means of, say, always takers and compliers will provide only noisy evidence regarding the null of no selection in the absence of a very large selection effect, a very large sample, or both.*".

This reasoning applies for the (TEST^1) on (CIA^1) since I have a very small sample size of treated agents, whereas it does not fit the case for (TEST^0) on (CIA^0). According to this scenario, it seems more prudent to consider no selection bias exclusively between *Never Takers* and *Compliers*. On contrary, for the case of (TEST^1) on (CIA^1), I can not conclude that there is no evidence of selection bias since I only have a noisy measure of it, however, results suggest that if there exists a selection bias between *Compliers* and *Always Takers* it is not very large as one may think. The prudent interpretation of (TEST^1) results is also supported by the difference in magnitude between the coefficient shown in column (2) and the one from the reduced form estimation (i.e., 0.003; Table (16) in Appendix (A)) that are very close in magnitude, suggesting chances for selection bias. In conclusion, these tests provide external validity to the results presented in Table (5) that can be now generalized to a wider population.

8 Conclusions

This work represents the first attempt to investigate the role of MA in English on work-related migration decisions after graduation. In particular, the migration decision is observed one year after the end of the MA, and for this reason, it is likely to influence future individual work opportunities in terms of earnings

and job positions. The exclusiveness of this work is due to the fact that the supply of this type of degrees is recent and the Italian university market is a proper case of analysis because it experienced a sharp increase in the supply of MA in English only in recent years. For this reason, I analyse the phenomenon on the first cohorts of graduates exposed to this offer, in relation to the probability of working abroad.

My results suggest that graduates with a MA in English increase their probability of working abroad by 11.3 percentage points that are in line with the result provided by Parey and Waldinger (2011) on studying abroad. This result, when compared to the sample average of working abroad graduates (3 percent), indicates that the probability increases almost fivefold for those who graduate in English. However, this increase seems to be particularly relevant for graduates in STEM fields, for students not coming from the top ten institutions of the country, and for grads located in the southern regions. The first result suggests that MA in English further increase international career opportunities for STEM graduates and that there are no effects for No-STEM fields also for the fact that these disciplines experienced an almost flat supply of MA in English. With respect to the latter two results, there is empirical evidence that introducing a MA in English is a good strategy for universities in order to improve the competitiveness of their graduates on the international labour market. At the same time, it emerges that MA in English may worsen the brain drain from economics disadvantages areas, further enhancing economic inequalities across regions.

Finally, from an institutional perspective, this work shows the importance of international MA in English and how the market absorbs this skill. The results suggest that supporting the supply of MA in English is a good policy instrument to foster graduates mobility. Moreover, my findings spark debate on

return to investment in human capital for the Italian university system. This means that the field is open for the investigation on the medium-run (e.g., five years) migration decision, analysing if those who work abroad after one year from graduation then come back to work in Italy or remain abroad (Becker et al., 2004). Along this line, policymakers should also consider promoting labour market incentives in less-developed regions to avoid this potential issue.

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Appendix A Reduced Form Estimates on Work Abroad

Reduced form (RF) estimates provide the first positive result in terms of causal inference (Chernozhukov and Hansen, 2008). Coefficient estimates are robust to the introduction of all the controls, and the difference in means between the subgroups defined by the instrument decreases from 0.9 percentage points to 0.3 in the specification including controls. In particular, I find a positive and strong statistically significant result for the instrument coefficient that shows an increase of 0.3 percentage points in the probability of working abroad for those who were exposed to the introduction of a MA in English while they were enrolled in the BA (Column (8)).

Table 16: Reduced Form Estimates

Dep. Variable: Work Abroad	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Introduction of MA in English	0.009***	0.004***	0.004***	0.003**	0.003**	0.003**	0.003**	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Individual Characteristics				✓	✓	✓	✓	✓
Parents' Education					✓	✓	✓	✓
Parents' Work Status					✓	✓	✓	✓
Unemployment Rate & GDP (logs)						✓	✓	✓
Fixed Effects		✓	✓	✓	✓	✓	✓	✓
Control Dummies:								
Born Region			✓	✓	✓	✓	✓	✓
Residence Region			✓	✓	✓	✓	✓	✓
BA Final Grade							✓	✓
High School Final Grade								✓
Observations	242070	242070	242070	242070	242070	242070	242070	242070
F-stat	18.11	206.30	132.93	152.37	186.76	180.33	282.78	422.23

Note: Parental work status reference group: house worker. Parental education reference group: high school. Unemployment rate and GDP are considered at the provincial and regional level, respectively. Fixed effects include dummies on Cohort of graduates, BA and MA university and disciplinary area. BA and High School final grades are included as dummies for each specific grade. Estimations include dummies that keep track of missing observations for the set of controls on parents' education and type of work and final grades. Control variable estimates and standard errors do not change from OLS; results are available upon request. Standard errors are clustered at MA disciplinary area and university level (541 clusters). F-stat is computed by using the Frisch-Waugh-Lovell theorem, partialling out cohort dummies. *, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.