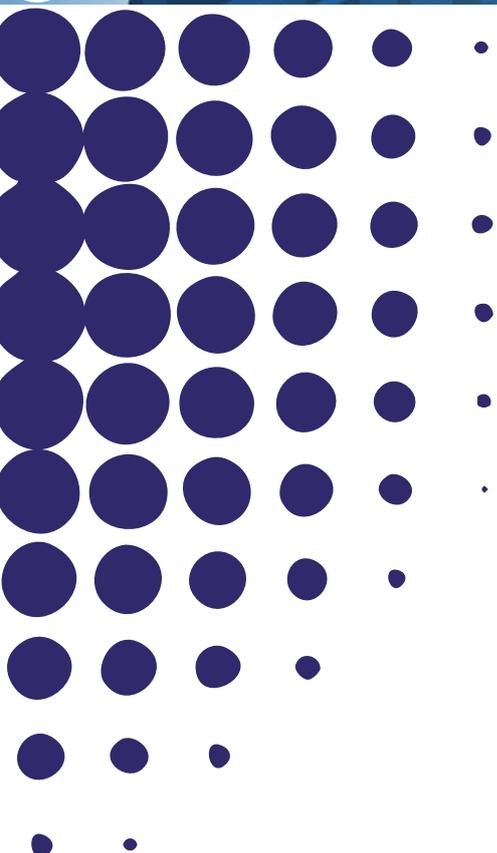


Length of the stay in the host country and educational achievement of immigrant students: the Italian case

Adriana Di Liberto

July 2013



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Adriana Di Liberto

CRENoS (Centre for North-South Economic Research)

Università di Cagliari

Via S. Giorgio 12, Cagliari, Italy

Tel+070 6753765

Email: diliberto@unica.it

Abstract

Using Italian data on standardized test on Language for different levels of schooling we investigate 1) if the observed gap in educational attainments in first generation immigrants tends to lower the longer their stay in Italy and 2) if younger children reduce the gap faster than their older classmates. Results confirm the presence of a significant gap between natives and immigrants students in school outcomes for all grades, with first generation immigrants showing the largest gap. Second, comparing the results between first and second generation immigrant students they also suggest that the significant gap observed on first generation is mainly due to the negative performance of newly arrived immigrant children in Italy. That is, for first generation students, closing the gap with second generation ones seems to be, for the most part, a matter of time. However, the gap between natives and immigrants remains significant in all grades. Finally, when we compare the results across the different grades, it turns out that interventions at younger ages are likely to be more effective. This result suggests that the possible benefit of policies that delay immigrant family reunification need to be compared against the costs of students' remedial assistance.

Keywords

Immigrant students, educational attainments, age at immigration

JEL Classification

J15, I21.

Acknowledgements I wish to thank the INVALSI and, in particular, Patrizia Falzetti for providing the data on students outcomes. I also thank Benedetta De Magistris for her excellent work as research assistant.

1. INTRODUCTION

“In order to close the achievement gap, institutional changes must be made at the school level, including changes in language teaching... Proficiency in the language of instruction is a major tool and precondition for learning.”

OECD (2010)

Since the last decade of the 20th century European countries have experienced large waves of migration flows from both within the EU and from outside it. As a consequence, the integration of third-country nationals has been identified as a priority at European level and migration-related issues are a central part of the Stockholm Programme, adopted by the EU Member State governments at the December 2009 European Council.

Among the proposed indicators of migrant integration, language skills and educational attainments are identified as crucial. Low skilled are more at-risk-of-poverty or social exclusion rate and young people with a migrant background are found to be at greater risk of being drop out at school and of exiting the education and training system without having obtained an upper secondary qualification. Data are striking: in 2008 regardless of gender, the share of early school leavers with a foreign background was four percentage points higher than the share of their counterparts with native-born parents (European Union, 2011). In general, the school performance gap between native and immigrant children is well documented for a number of industrialized countries and it is a real concern for policy makers since it also predicts a gap in labor-market performance and other long-term outcomes.

In this paper we use the standardized test data provided by the INVALSI, the Italian institute in charge of evaluating schools' performance, to analyze the gap in reading literacy of young immigrant children in Italy. In particular, we examine if the latter is significantly influenced by pupil's age at immigration and length of stay, and country of origin. Italian data are most suitable for studying these issues. Together with Spain and Greece, Italy is a recent migration country. At 31 December 2008, in Italy the percentage of foreign population as a share of the total population was 6.5%, of whom 1.9 were citizens of (other) EU Member States and 4.6% were from non-EU countries (third-country nationals). With respect to educational levels, according to PISA 2009 results, Italy is one of the OECD countries with the largest native-immigrant school performance

gap.¹ In particular, this result holds for second generation students, even after adjusting for socio-economic background (OECD, 2012). Further, its share of early leavers from education and training (persons aged 18-24) among the subgroup of foreign-born has been 46%, against the 19% observed for the total population.² Finally, across EU countries, Italy has the lowest proportion of foreign citizens with tertiary education and a large one of low educational attainment level (Eurostat LFS, 2008).³ In sum, migrants have a lower level of income and are at increased risk of poverty and social exclusion and, with its low educational attainments of both migrants and natives, Italy is one of the countries most at risk.⁴

Thus, in this study we investigate how large are the differences in standardized language test scores between immigrant and Italian children conditional on personal, family and school characteristics distinguishing between first and second-generation immigrants. Second, for first-generation immigrants, we study whether the age at immigration influences their academic achievements. Indeed, unlike most previous studies in this field, our data enable us to compare the results obtained by children enrolled in the second and fifth grade of primary school, sixth grade of lower secondary and tenth grade of upper secondary school.⁵ This allows us to study if the educational gap narrows at a different pace early or later in students' life. We focus on language tests because the lack of language skills plays a crucial role in immigrants' integration processes. Further, we also concentrate on the age of immigrant children and their length of stay in the host country since, although people can learn languages at any age, a large literature suggests that young children would have an innate ability to learn the rules of new languages, and this ability would decrease by adulthood (Johnson and Newport, 1989).⁶

¹ "In 2009, immigrant students scored lower in reading than non-immigrant students in 23 out of 28 OECD countries with sufficient data. The performance gap reaches 99 score points in Mexico, more than 80 in Iceland and more than 72 in Italy. In Finland, Austria, Belgium, Sweden, Denmark and France, the gap is 60 score points or more, the equivalent of more than a year and a half of schooling", OECD (2012).

² At the European Union level, the share of foreign-born early school leavers aged 18-24 is higher than the share of early school leavers aged 18-24 of all population. The most marked differences in the shares are in Germany, Greece, Spain, France, Italy and Cyprus, Austria and Finland.

³ "In 2008, the at risk of poverty or social exclusion rate among foreign-born persons was highest in Greece (45 %), followed by Belgium, Italy, France, Sweden, Spain, Austria, Finland and Denmark, where the proportions of migrants at risk of poverty or social exclusion were above 30 %." See EU2011.

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⁵ Data on grade eight are also available but are excluded from this analysis since, unlike that of other grades, they more high stakes and thus hardly comparable.

⁶ Moreover, children who learn a language before adolescence are more likely than older learners to attain native-like pronunciation (Patkowski, 1990).

Our analysis is also related to the growing literature that dates back to the end of the nineties and investigates the role of social distance and social capital on economic outcomes (Helliwell and Putnam, 1999). In particular, Glaeser (1999) argues that, together with education levels, one of the factors that appear to be crucial in creating social capital at the community level is ethnic and linguistic heterogeneity.⁷ In general, note that social distance is a very broad concept and it refers to the cognitive relationship of two cultures that come into contact within an individual, and it is influenced by many factors including immigrants' length of residence. Moreover, according to linguistic scholars, social distance is one of the sociocultural factors affecting the second language acquisition by immigrants and the latter is crucial for their integration in the host country.⁸ In this case, learning conditions may also affect learning processes: with bad learning condition, the second language learner (immigrants) thinks that their language is more dominant than the target language group (natives), they will feel that there is no or less need to learn the target language.

The structure of this study is based on five different sections. The following section introduces the literature review, while the third the descriptive analysis. The empirical analysis and results are described in the fourth section, while conclusions are in section five.

2. LITERATURE REVIEW

The school performance gap between native and immigrant children is well documented for a number of industrialized countries. Starting with the Coleman Report (1966), the influence of the ethnic composition on student's individual outcomes represents an important area of studies. U.S. studies focused mainly on achievement gaps between ethnic minorities and white students, while studies outside U.S traditionally focus on native versus immigrant students.

Despite that, only few recent studies address the important question of whether the age at arrival and the length of stay in the host country matters for immigrants educational achievements. Bohlmark (2008) is one of the first studies to examine this issue. In his study, he considers a stylized fact that second-language learning is negatively related to higher age. Data include a sample of siblings graduating from ninth grade (generally at age 16) in Sweden and a grade point averages (GPA) measure that is standardized to be comparable across years starting from 1988

⁷ Alesina and La Ferrara (2002) also document the positive effects of homogeneity on social participation across American states. They argue that schools are a primary area where social capital is developed.

⁸ Schumann (1976) describes it as pertaining to the individual as a member of a social group (second language learner) which is in contact with a different social group whose members speak another language (target language group). According to the Schumann's Acculturation Model, social distance explains the acquisition of second language and it is influenced by many factors such as the equality of native and immigrant groups, assimilation or integration, enclosure, cohesiveness, size, cultural congruence, attitude and length of residence.

until 2003. The use of siblings allows him to control for likely neighborhood effects, which constitute a potential source of bias in his cross-sectional estimation analysis. Indeed, immigrant families can be hardly considered randomly assigned to cities and neighborhoods or children to schools and he exploits the siblings strategy to control for any omitted variables capturing time-invariant, family-specific characteristics. However, in this case he needs to assume that older and younger siblings would have performed equally well in the absence of immigration. Bohlmark (2008) finds that the estimated critical age at immigration is about nine: children arriving in Sweden up to about the third grade seem to catch up well with their peers who came before preschool age, and this result is stable for both boys and girls. Above the age of 9, however, there is a strong negative impact on performance.⁹ Moreover, he also finds significant differences by geographical origin with an estimated profile clearly steepest for Asian children and flattest for Western children.

Ohinata and Van Ours (2012) investigate the determinants of the observed differences in test scores by both first and second-generation immigrants and native Dutch children conditional on personal and family characteristics and classroom environment. Their sample includes children aged 9 and 10 and for the first-generation immigrants, they study whether the age at immigration influences the academic achievements. Their educational attainment outcomes include language, science and math test scores and they find that these are affected by both age at immigration and whether or not one of the parents is native Dutch. However, when exploring whether age at immigration has an effect on the educational attainment of the immigrant children they have to exclude language results from the analysis due to shortage of data. Results from science and math test scores suggest that age at immigration is important: the later immigrant children arrived in the Netherlands the lower their educational achievement. Finally, they also find that second-generation immigrants have no lower language scores compared to native Dutch children irrespective of the origin of their parents.¹⁰

Among the non-European studies we briefly mention three additional analyses. The first is Cortes (2006) that using educational performance data of children in San Diego and Miami finds that the gap in test scores between first-generation and second-generation immigrant children decreases the longer the former reside in the United States. Second, using TIMSS data, Sweetman (2010) finds that, beyond the first year, the following years in the host country have almost no effect on

⁹ Similarly, using Norwegian data, Bratsberg et al. (2011) find that the first-generation immigrant children are especially more likely to leave high school early with this effect being stronger the later the age at immigration

¹⁰ In fact, the datasets employed in this study are the 2006 Progress in International Reading Literacy Study (PIRLS) and the 2007 Trends in International Mathematics and Science Study (TIMSS), and age at immigration information is only available in TIMSS and, therefore, this analysis is only possible for the science and math scores and not for the reading scores.

test scores beyond. Finally, Corak (2011) analyses high-school dropout rates in Canada and finds that up to age 9 the chances of being a high-school dropout do not vary according to age but children arriving after that age are more likely to not graduate from high school.

Due to data limitations, cross countries analyses represent an exception more than a rule and none of them focus specifically on the age at arrival. The exception is provided by Heath et al. (2012) that comparing cross-country results based on PISA data confirms the picture of the existence of a late-arrival penalty for immigrant students. However, results are heterogeneous across countries, with Italy, Belgium, Sweden and Ireland being the countries with the largest late-arrival penalties. Among the other most recent cross country studies, Brunello and Rocco (2011) investigate if the increased share of immigrants in schools and classes has affected the school performance of natives and try to address the question of whether there is an endogenous sorting of immigrant students across schools and classes. In general, measuring the effect of immigrants on the school performance of natives is complicated by the fact that immigrants sort across countries and both immigrant and native students self-select into schools and classes. Using a cross country sample they therefore address the likely endogenous sorting of students across schools and classes by aggregating data at the country level. However, this strategy does not eliminate the selection of immigrants across countries of destination. Using PISA data covering European and Anglo-Saxon countries they find that the effect of the share of first generation immigrants on the test scores of natives is homogeneous across countries. It turns out that the marginal effect is negative and statistically significant but the estimated size of the effect is small: doubling the share of immigrant pupils in secondary schools (from the sample average of 4.8% to almost 10%) would reduce the test score of natives by 1.32 to 1.96 percent. results do not change significantly when they include second generation immigrants in their analysis.¹¹ Finally, Dustmann et al. (2012) compare the achievement gap between second-generation immigrant children and native children aged 15, across several OECD countries and find that, together with parental characteristics, the foreign language spoken at home represents the most important factor associated with the educational gap.

Very few studies focus on the Italian case and no one specifically deals with the age at arrival. A recent paper by Tonello (2011) investigates the question of whether non-native peers affect natives' educational outcomes, finding that non-native school share has small and negative impacts on Language test scores of natives' peers, while it does not significantly affect Math test scores. That is, this study shows as Language skills are the most influenced by peer interactions between natives and non-natives. In particular, results suggest that, as long as non-native school

¹¹ They consider a broader definition of immigrant pupils, which includes also the 15 years – old students who are born in the country from foreign parents.

share is sufficiently low, non-native students' presence is not able to generate negative spillovers on natives' outcomes.¹² We will further investigate the still unexplored Italian case in the following sections.

3. DATA AND DESCRIPTIVES

Our source of data is the database provided by the National Institute for the Evaluation of the Educational System of Instruction and Training (INVALSI henceforth), a government agency that carries out a yearly evaluation of students' attainment in both Mathematics and Language. Since the focus of the paper is on language skills of immigrant students we only use the results on the language test that covers the domains of Italian (reading comprehension, knowledge of the language, grammar).

Moreover, in order to better compare the results for students attending different grades, we use the normalized values of the language standardized test. The latter are the test scores for language expressed as percentage of right answers, and values ranges from 0 to 100. In general, INVALSI test are similar to the PISA standardized tests since their aim is to measure how far students have acquired some of the knowledge and skills essential for full participation in the knowledge society. However, unlike PISA, since 2010 the INVALSI standardized tests are compulsory for all Italian schools and students, both public and private, attending specific grades of schooling.

In our analysis we use the 2010-11 school-year data for four levels of schooling: second and fifth grade of primary school, sixth grade of lower secondary school and tenth grade upper secondary school. We therefore have four different samples, each consisting of approximately 500.000 individuals per grade. The Italian school system starts at age six, with five years of primary school (grades 1 to 5) followed by three years of lower secondary school (grades 6 to 8). Upper secondary education lasts three to five years depending on the type of school chosen. These tests have been carried out starting in 2008-09 schooling year but for the 10th grade students the 2010-11 was the first school year that these evaluation tests were performed. For this reason, 10th grade data need to be interpreted with caution since the Language test has been intentionally designed by INVALSI to be easier than normal.¹³

The INVALSI questionnaire is designed to collect detailed information not only on students standardized test results but also about a significant number of student's background and family characteristics. In particular, this information is collected through a separate 'Family

¹² For sufficiently low values of non-native school share (below 10%), non-native students do not significantly affect natives' attainment.

¹³ See INVALSI (2011).

Questionnaire' sent to each family before the test, and a 'Student Questionnaire' filled by each student the first day of the test. Finally a students' general information part is also compiled from school administrative staff. However, one important exception is represented by primary school children attending grade two for whom data on personal characteristics are not collected. Therefore, for this cohort we do not perform any regression analysis and only show in this section some descriptive statistics on the proportion of immigrant students and their school outcomes depending on their age of arrival in Italy and their place of birth.

This dataset enables us to distinguish between Italian and non-Italian students. It is important to note that this classification refers to a pure citizenship criterion and that, unlike other countries, in Italy this follows the *Ius sanguinis* rule that states that individuals (and their citizenship) belonged to a family and not to a territory.¹⁴ Thus, we will use the terms native or Italian as synonyms implying that a student is native/Italian if at least one of the parent is an Italian citizen but she/he is not necessarily born in Italy. Conversely, for immigrant students we may use a standard approach and separately classify first generation students, that is, students born abroad of foreign-born parents, from second generation students, that is, native-born children of foreign-born parents.

We set the scene with Table 1 that shows the distribution of immigrant students in the traditional three Italian macro areas: North, Centre and South. We observe that Italy shows large variations in the geographic distribution of immigrant students. The distribution of the total number (both natives and immigrants) of students enrolled in the Italian schools in all grades is somewhat larger than 40% in the North, it is below 20% in the Centre and around 40% in the South. Despite having almost the same percentage of students, as expected, the more developed and rich northern areas receive the vast majority of migration flows and a much larger share with respect to southern areas. More than 60% of both first or second generation students are located in this area of the country, while in the South this percentage ranges between 9% of second generation immigrants in the 2nd grade to 21% in the 10th grade.¹⁵

Finally, INVALSI have also collected some information on the place of birth. However, it is only possible to classify if immigrant students are born in one of the European Community (EU27) countries, in a European country outside EU27, or outside Europe. Despite the vast literature that

¹⁴ The Italian citizenship rules follows the Roman law rule of the *Ius sanguinis* that states that individuals belonged to a family and not to a territory. In other country studies where the *Ius soli* is applied, that is, the right of anyone born in the territory of a state to nationality or citizenship we find that the native vs. non-native categorization follows different criteria with respect to the ones described here.

¹⁵ This is well documented also at the country level: immigrants sort across countries and the more developed countries usually host a higher share. See Brunello and Rocco (2011).

stress that differences in educational attainments vary significantly across ethnic communities, unfortunately, as it is often the case, data disaggregated by country of birth are not available. In this specific case, with the exception of European students, we are not even able to distinguish by continent of birth.

Table 2 shows the distribution of immigrant students in the different schooling grades analyzed here. The overall percentage of immigrant students is similar across the different grades and ranges from 9.6% in grade 6 to 8% in the 10th grade of upper secondary. Conversely, the distribution between first and second generation immigrant students shows some significant changes across the different grades. In particular, data shows as among younger children (2nd grade) there is a higher percentage of second generation pupils, while for older students things change with a larger proportion of first generation immigrants (5.2% versus 1.6 of 2nd generation) for 10th grade upper secondary school students. This is a well-known phenomenon in the analysis of migration patterns. In countries with established migration histories, second-generation students represent a larger proportion of students than first-generation students. Conversely, where immigration is only a very recent phenomenon such as in Italy, first-generation students represent the majority. It is likely that the change in pattern between the two components of immigrant students is firstly observed in lower grade of schooling.¹⁶

Further, we observe that EU27 immigrants are more numerous among younger children (40% in 2nd grade) but, apart from that, overall, the distribution of first generation by place of birth is between 26% and 40% for EU27, 23% and 32% for other European countries, and 36% to 45% for children born in other countries. Note that the number of EU27 citizens migrating to a Member State other than their own has significantly increased during the last years and peaked in 2007. The largest group was formed by the new EU countries: Romanians, followed by Poles and Bulgarians.¹⁷

Table 3 provides statistical evidence of the differences in the Language test score results between native and immigrant students. In this case, we also separately identify children of mixed parentage, that is, Italian children either born in Italy or abroad with only one foreign-born parent from the group of native students. In this case, for both Italian and first generation students, we are able to identify possible differences based on the place of birth. As expected, for all grades, native students obtain on average a significantly higher score than migrants and 2nd generation perform better than first generation immigrant students. However, when we take into account the place of

¹⁶ See OECD (2012).

¹⁷ On average by 12% per year during the period 2002–08. The EU-27 Member States received 384 000 Romanian citizens, 266 000 Polish citizens and 91 000 Bulgarian citizens. See europeanunion2011.

birth of first generation students, we observe that the test performance of European students is better than that achieved by students from other countries and, for primary school only, it is even better than that achieved by second generation students.

Further, we exploit some additional information on first generation immigrants. In fact, in its surveys the INVALSI asks these students how old they were when they arrived in the country of assessment. Using this information, in Table 4 we identify how long immigrant students have been living in Italy before starting school and, based on the date of arrival, we include their language test results. In particular, we distinguish between pupils who have lived in Italy before starting the school: i) one year, ii) between 2-4 years, iii) between 5 and 7 years, and iv) more than 7 years. These numbers show that the length of stay of first generation immigrants explain to a large extent the observed achievement gap with the second generation immigrants. In particular, for fifth graders, after 5 years in the Italian schooling system, the percentage of correct answers of a first generation student is exactly the same as that obtained by second generation immigrants. That is, if two immigrant children have attended only the Italian school system, then they get the same test result irrespective to their first or second-generation status.

For upper grades of schooling the picture is similar but we still observe that small differences persist. In particular, we observe that differences are almost nil for the sub-group of first generation of EU27 origins, while the gap is larger for non-European first generation immigrants. Overall, this comparison between second generation and first generation suggest that for first generation students, closing the gap with second generation ones may only (or for the large part) be a matter of time. Conversely, the gap between natives and immigrants remains persistent in all grades.

Thus, other factors seem to be responsible of immigrant disadvantage: both the family and immigrant communities' socio-economic background and cultural differences are the most obvious explanation of this educational disadvantage. In particular, existing evidence shows that Italy tends to attract immigrants with lower qualifications, thus, this significant gap may be due to this. However, comparing the average educational attainment of Italians versus immigrants, Dustmann et al. (2011) show that their formal educational gap across the two groups is similar. We will further investigate these issues in the following section.

4. RESULTS

We estimate a standard education production function where student test performance in language is modeled as a function of the native vs. immigrant first or second generation status, and a set of additional variables that control for students characteristics (gender, socio-economic background,

native/I or II generation immigrants and area of origin), school characteristics (size, school type if in upper secondary school) and catchment area characteristics (macro-area dummies). More precisely, we study the relationship between the length of stay in the Italian school system and immigrant students' outcomes using two alternative regression settings of the form:

$$y_{ij} = \alpha + \beta \text{FIRST}_{ij} + \gamma \text{SECOND}_{ij} + \delta X_{ij} + \theta Z_j + a_{ij}$$

$$y_{ij} = \alpha + \gamma \text{SECOND}_{ij} + \delta X_{ij} + \theta Z_j + \varphi \text{YEARS_FIRST}_{ij} + a_{ij}$$

Where, in both equations, y_{ij} is an indicator of performance of student i attending school j , SECOND is a dummy for second generation immigrant students, X is a set of individual students' additional characteristics, Z are school and area controls. What distinguishes eq. 1 from eq. 2 is the way we introduce first generation immigrant students: in model 1 we include the overall dummy FIRST , while in model 2 we include YEARS_DUM , that is, a series of dummies that take into account for the length of stay of first generation immigrant students. In details, we identify if the latter have spent 1) one year, 2) between 2-4 years, 3) more than five years in the host country. An exception is found in Table 7, for 10th grade students, where we have four rather than three categories since we distinguish between 3) 5 to 7 years in Italy and 4) more than 7 years. The analysis is performed for three different grades of schooling: the fifth grade in primary school (ISCED 1), the sixth grade in lower secondary (ISCED 2) and the tenth grade in upper secondary school (ISCED 3). Note that our year's dummies capture both years in Italy before performing the test and that of age at immigration. That is, they are two sides of the same coin. However, the latter interpretation is not (at least immediately) comparable across the different grades since one need to adjust for age differences. Moreover, comparing the results on different grades should enable us, even if imperfectly, to disentangle the effect on language performance of students' age at arrival from the effect of how long immigrant children have been in Italy. In particular, we try to identify if pupils are particularly at risk of suffering a long-lasting gap if they arrived at 8 or at 14 in the Italian system.

We start in Table 5 where we include the OLS results for fifth grade students. Models from 1 to 4 use the overall dummy for first generation immigrant students, while models from 5 to 8 separately introduce specific dummies on these students length of stay in Italy. This sample includes almost four hundred thousand students that are attending the 2010-2011 school year. These specifications are replicated also in Table 6, for 6th grade students, and Table 7 for 10th

grade students. In all our analysis, we always report in parenthesis robust standard errors, clustered at school level.

Model 1 is the most parsimonious one: together with immigrants dummies, includes a series of additional controls for the students main additional characteristics, that is, age, gender, a measure of her/his socio-economic background, if she/he speaks a foreign language at home or an Italian dialect, and the number of students per class. Moreover, in all models we always include macro-area dummies in order to control for local differences.¹⁸ In fact, previous studies show that geographical location is an important determinant of Italian students test scores, with students in the North-East area usually outperforming the others, and those from the South being substantially behind (Cipollone et al., 2010 and Bratti et al., 2007). Results (available upon request) confirm these territorial patterns.

With rare exceptions, such as the number of students per class that is never significant for younger children, overall, we find that our results are largely consistent with the literature. In general, cross country analysis shows that language gender gaps often results in favor of girls and this is confirmed by our analysis.¹⁹ Second, as expected, the index of socioeconomic background, *escs*, is positive and strongly associated with student achievement. This variable is created on the basis of the occupational and educational level of the student's parents, home educational and cultural resources. This represent an important control in this setting since, in addition to their cognitive abilities, immigrant students sorting is also significantly driven by the family background (Brunello et al., 2007).

Third, since our focus is on language skills, we also include two additional dummies. The first, foreign language, identify if the surveyed student speaks a different language from Italian at home, while the second, dialect, consider if she/he speaks an Italian dialect at home. Interestingly, not only the first dummy for foreigners is negative and significant. Indeed, even speaking a dialect at home, even controlling for the family socio-economic background, seems to be negatively related to students' standardized test results.

Further, estimates confirm that children of immigrants face important gaps in language test results, with first-generation immigrants representing the most disadvantaged group. Note that our

¹⁸ We control for North-East, North-West, Centre, South, South-Islands.

¹⁹ For example, PISA 2009 results report higher mean reading performance for girls in most countries.

dependent variable, the test scores results for language, is expressed as percentage of right answers. We find that the coefficient on first generation immigrant is -5.20, while for second generation is -3.6. Given that the test results are between 0 and 100, with a sample average of approximately 65, the estimated coefficients can be interpreted in terms of decreased test score results: that is, for first or second generation immigrant student, the students' test score results would deteriorate by approximately 5% and 3.6% (of correct answers).

Finally, note that, unlike most studies in this field, we did not control for private/public schools in our analysis. Unfortunately, INVASI data do not allow us to control for this school characteristics. Nevertheless, the proportion of students attending private schools in Italy is very low, about 4%. Second, quantitative studies on the Italian case that also include a private schools dummy always show a negative and significant coefficient, rather than a positive sign as in most international analysis.²⁰ Indeed, data show that private school students' performance on standardized tests is worse than that of public Italian school students. Brunello et al. (2008), argue that one of the main reasons is that the large part of Italian private schools focus more on the recovery of less able students than on across the board high quality education..²¹

In model 2 we further identify two important possible determinants of the students' socioeconomic status, that is, the number of siblings and how many books there are at home. With respect to the first indicator, statistics show Italy in the last places for the women fertility rate: in 2011 this rate was 1.42 children per woman.²² However, when we distinguish between Italian and immigrant women, fertility rates are, respectively, 1.31 and 2.23. Thus, with the number of siblings we try to separately control the immigrant students' status from having worse conditions, such as a quiet place for studying effectively, at home. In general, note that data show that, unlike natives, the presence of dependent children among migrants significantly increases the risk of poverty and also of being in a less favorable situation with regard to housing conditions: the proportions of migrants living in overcrowded dwellings is high in almost all EU countries. In other words, a simple dummy on immigrant student may also capture the effect of children living in overcrowded dwellings. With the number of books at home we simply try to identify the

²⁰ PISA data show that in 16 OECD countries and 13 partner countries and economies, students in privately managed schools tend to perform better than students in publicly managed schools, but Italy is one of the very few exceptions.

²¹ On this see also Di Liberto et al. (2013).

²² Considering the mothers' citizenship, in 2009 second generation children born in Italy were mainly from Romania (16,727), followed by Morocco (14,370), Albania (9,937), and Chinese mothers (just over 5,000 births). See ISTAT (2011).

importance of specific family cultural upbringing, not captured by the *escs* variable.²³ As expected, these coefficients are both significant and with opposite sign, negative for siblings, positive for books and cause the coefficients of both first and second generation students to decrease. In terms of policy implications, this evidence suggests that policies directed towards improving schools conditions (such as providing adequate study spaces and efficient libraries) may have large returns for the more disadvantaged students.²⁴

Model 3 in Table 5 show that, introducing two important school characteristics such as the school size and the average index of socioeconomic background at school level, *escs_school*, does not change significantly the results seen in the previous models. In fact, for grade 5 children, these two variables are never significant. As a final check we also introduce two dummies that identify the origin of first generation students. The reference category is represented by students originally born in one of the EU27 countries. As suggested also by the descriptive analysis in section three, we find that with respect to the reference category, the schooling performance of immigrant students born outside EU27 countries is worse. In particular, children from non European countries who immigrate in Italy do show the largest gap in Language test outcomes. Thus, the importance of cultural factors is also emphasized by these results. However, we do not further stress this issue here, while use these results of model 4 (and model 8 below) only to claim once more the importance of collecting data on the immigrant country of origin information.

Models from 5 to 8 replicate the previous analysis substituting the dummy identifying first generation students with separate dummies that also take into account their length of stay in Italy. In all these models we observe the same pattern arising: the gap existing between first and second generation immigrant students seems to depend almost exclusively on how long they have been in Italy. In details, newly arrived children show poorer performance. The late-arrival penalty is significant, but after a relatively brief period in Italy, the decrease in percentage of correct answers at the language test decreases by approximately two-third: the estimated coefficient drops from -11.3 for late arrival children to -3.8 and -3.4 for, respectively, immigrant children who are enrolled in the Italian school system between two to four years before the test and those that enrolled in the Italian school system since the start of primary school. These results are almost entirely confirmed also by models 6 to 8. Again, model 8 suggests that the penalty of immigrant children is likely to depend by the combination of country-of-origin and country-of-destination. Overall, this large gap

²³ Hanushek and Woessmann (2011) stress as the number of books at home is the best single predictor of students' performance.

²⁴ .

of late-arrivals is usually explained by the lack of familiarity with the new language, and more precarious living conditions with respect to early-arrivals.

The results for lower secondary (grade 6) students are reported in Table 6. In terms of students' characteristics, our sixth grade students' analysis seems to confirm past results on primary school children. However, this is not true for the school characteristics variable. In fact, results suggest that, once students start with lower secondary school, the class size, the school size and the average level of socioeconomic background affect the students' results. The latter should take into account for the socio-economic composition of the school and peer effects. As expected, it shows a positive and significant coefficient: thus, after primary schooling, peer effects seem to appear more correlated with students' results. However, this may also be the result of a sorting process of best students into best schools, previously absent or less important at primary school level. This result is consistent with other recent evidence that finds that, for both natives and immigrant students, in Italy inequality of opportunities emerges at the lower secondary school level, while in primary school the influence of family background on achievement is limited. This initial sorting translates into a social tracking along the upper secondary's tracks we examine below.²⁵

Indeed, selection issues are likely to be at play for immigrant students. In other words, family choices may therefore represent a major issue at this stage of the Italian schooling system. Indeed, since there are no explicit formal rules on this, principals and school-boards may allocate children according to criteria that do not ensure within-class heterogeneity. Our set of covariates allows us to control for the most likely sources of endogeneity, as we control for students socioeconomic background. In fact, Italian students' sorting is also significantly driven by the family background.²⁶ However, it is fair to say that endogeneity issues may still play a role in our OLS analysis and the interpretation of our results in causal terms always need to be taken with caution.

When we focus on the length of stay of first generation immigrant students) students (models from 5 to 8), as before we observe that the estimated coefficient drops from -15.2 for late arrival children to -6.7 and -5.6 for, respectively, immigrant children who are enrolled in the Italian school system between two to four years before the test and those that enrolled in the Italian school system since the start of primary school. Thus, while the pattern is similar to that observed for primary school children the estimated gap of late-arrivals is significantly larger: with respect to the 16% difference (with respect to the observed mean value of the language test of 69) in primary

²⁵ See De Simone (2013).

²⁶ See Brunello et al. (2007).

schooling, at grade six we observe a 27% gap of being a newcomer in the Italian school system (the observed mean value of the language test in grade 6 is 55).

We now turn our analysis to results on grade ten students in Table 7. With respect to the earlier grades, the analysis for upper secondary grade ten students includes two additional variables that identify the school type. Indeed, as said above at this level of schooling, previous studies on the Italian case, reveal a significant role for the educational track. Italian upper secondary school tracking is determined by the presence of differentiated curricula rather than by a formal assignment process to academic or vocational courses depending on students past performance or on alternative selection processes. That is, Italian students choose schools that specialize in each of the three main curricula: Lyceum, Technical and Vocational. In our regression analysis we use the Technical school as references. The vocational/academic intensity is at its lowest/highest level in the Lyceum (with almost no vocational component) and at its highest/lowest level in Vocational schools. In between these two curricula there is the curriculum offered by Technical schools. Moreover, only Vocational schools can last for 3 rather than 5 years, even if graduates from all three school types, after five years, may continue to tertiary education. In sum, there are significant differences in terms of programs and curricula as well as in the average test scores of students across the three types of schools.

In general, empirical studies shows that students in general track in most cases have higher achievement than those in vocational tracks and this is true also for the Italian case (Cipollone et al., 2010, Di Liberto et al., 2013). This implies that the choice of school is not random, conversely, it is strongly associated with family background. Thus, school-type differentiation is expected to control for the relationship between immigrant background and educational outcomes. Both first and second generation immigrant students are more likely to end up in lower-performing Vocational schools, because they often originate from lower social strata. Moreover, since the drop-out rate in Italy is particularly high after the first year of upper secondary schooling, it is also possible that, at this stage, the more disadvantaged students (repeating grades) have already left the schooling system.

In general, our results on 10th grade students are very similar to those previously discussed for 6th grade students. A notable difference is the pace at which first generation immigrants close the gap in their first years in Italy: while for both 5th and 6th grade, immigrant students arrived in Italy from 2 to 4 years before the test show a gap that is about one-third of that observed for newly arrived students, in this case estimates suggest that the gap between the two categories in only

reduced by a half: in model five the coefficients are, respectively, -13.3 (for late-arrivals) and -6.9 for those who declare to have being stayed in Italy for 2 to 4 years. Moreover, the differences in performance between second generation and first generation students still disappear, but only after approximately 7 years in the host country. Thus, in terms of policy implications, this result suggests that if foreign children late arrival is the result of national migration policies on family reunification, then the possible benefit of delaying immigrant family reunification need to be compared against the costs of students' remedial assistance.

As a final robustness check, we have also replicated our analysis only including a specific subsample of schools. Indeed, in the above analysis we have used the entire student population data of selected grades at the national level. In addition to this, INVALSI also conduct a specific nationally-representative survey, where the same tests are administered under the supervision of observers in each class of the sample. This survey is conducted in order to prevent and control for cheating (mainly observed in the southern areas of the country) and facilitate the procedures of data collection available on students' achievements. Despite the possible advantages, first of all the better quality of data, the reduction of the sample size is significant: for example, for grade 5 students, the sample reduces from almost four hundred thousand to thirty thousand. Nevertheless, the use of this selected sample does not change our analysis: results, available upon request, are almost identical for all grades.

5. CONCLUSIONS

Using a standard education production function setting, this paper investigates whether the length of stay in the host country play a role in the school outcomes of immigrant students in Italy. Data on students' standardized test results on three different levels of schooling are examined and compared, namely, primary (grade 5), lower secondary (grade 6) and upper secondary (grade 10).

The results obtained are very much consistent with the literature. First of all, we confirm the significant gap between natives and immigrants students in school outcomes for all grades, with first generation immigrants showing the largest gap. Second, comparing the results between first and second generation immigrant students we also find that the significant gap observed on first generation is mainly due to the negative performance of newly arrived (one year of stay in the host country) immigrant children in Italy. For example, for grade 5 we observe that, controlling for other variables, results in the language test are for newly arrived foreign students are approximately 16% lower than average. At the same time, after 2 to 4 years in the Italian school system, this gap is reduced to 5% and it is very similar to that observed for second generation immigrant students. Similar findings are found for students enrolled in the 6th and 10th grade. That

is, our analysis suggest that, for first generation students, closing the gap with second generation ones may be (for the most part) a question of time.

Moreover, when we compare the results across the different grades, it turns out that interventions at younger ages are likely to be more effective. That is, this study suggests that the estimated gap between first and second generation students takes more time to close for upper secondary school students than for lower grades pupils. Note that, if foreign children late arrival is the result of national migration policies on family reunification, these results would imply that the possible benefit of delaying immigrant family reunification need to be compared against the costs of students' remedial assistance.

Finally, results show that in Italy the gap between natives and immigrants remains persistent in all grades. Thus, even if results indicate that new and improved interventions for mitigating disadvantages closely related to the late-arrival problems might be particularly effective, they also confirm that they are not enough for closing the native-immigrant performance gap. Due to their cross-sectional nature, these estimations mainly allows for a descriptive interpretation. Further analysis will try to deal with the endogeneity issues.

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APPENDIX

Table 1. Distribution of natives and immigrant students by macro-areas

Macroregions	Natives and immigrants	%		Native students	%	Immigrants 1st generation	%	Immigrants 2nd generation	%
2nd grade primary school									
North	227242	44.0		191725		8490	59.8	19865	68.1
Centre	95144	18.4		81623		3164	22.3	6671	22.9
South	193651	37.5		180243		2545	17.9	2621	9.0
Total	516037	100.0		453591	87.9	14199	2.8	29157	5.7
5th grade primary school									
North	225864	42.9		189701		15084	63.0	13524	66.0
Centre	95671	18.2		81372		5495	23.0	4701	22.9
South	204927	38.9		191410		3350	14.0	2272	11.1
Total	526462	100.0		462483	87.8	23929	4.5	20497	3.9
6th grade lower secondary school									
North	229123	42.5		187340		19943	64.4	12209	66.4
Centre	95950	17.8		81063		7073	22.8	3980	21.6
South	213692	39.7		199284		3940	12.7	2201	12.0
Total	538765	100.0		467687	86.8	30956	5.7	18390	3.4
10th grade upper secondary school									
North	181403	41.8		159830		14881	64.6	4858	58.8
Centre	76147	17.6		68283		5251	22.8	1674	20.3
South	176366	40.7		170308		2911	12.6	1724	20.9
Total	433916	100.0		398421	91.8	23043	5.3	8256	1.9

Table 3. Average test scores: Language test results (by place of birth)

	Place of birth			
	Italy	EU Countries (EU27)	Other European (non EU)	Non Europe
2nd grade primary school				
Native	73.2	68.1	65.1	66.4
Immigrants (1st generation)	59.8	63.7	59.7	55.7
Immigrants (2nd generation)	61.6			
Average score	64.9	65.9	62.4	61.0
5th grade primary school				
Native	74.7	71.3	68.4	69.8
Immigrants (1st generation)	64.8	68.7	65.2	61.3
Immigrants (2nd generation)	67.8			
Average score	69.1	70.0	66.8	65.6
6th grade lower secondary school				
Native	62.2	53.0	54.8	56.1
Immigrants (1st generation)	47.8	52.0	49.6	44.1
Immigrants (2nd generation)	54.7			
Average score	54.9	52.5	52.2	50.1
10th grade upper secondary school				
Native	68.3	62.9	62.7	64.3
Immigrants (1st generation)	57.4	60.7	60.1	53.4
Immigrants (2nd generation)	63.8			
Average score	63.2	61.8	61.4	58.8

Table 4. Language average test scores: immigrants (1st generation) by place of birth and time spent in Italy before the test

	Time spent in Italy before the test			
	1 year	2/4 years	5/7 years	>7 years
2nd grade primary school				
EU Countries (EU27)	61.3	63.3	65.1	
Other European (non EU)	55.4	59.9	60.9	
Non Europe	51.2	55.2	58.0	
All first generation	55.8	59.7	61.5	
5th grade primary school				
EU Countries (EU27)	63.4	70.0	70.1	69.3
Other European (non EU)	58.8	65.6	67.2	67.2
Non Europe	52.8	62.2	64.1	64.5
All first generation	57.6	66.0	67.1	66.5
6th grade lower secondary school				
EU Countries (EU27)	43.5	53.9	55.8	52.6
Other European (non EU)	42.4	50.6	52.6	51.2
Non Europe	35.4	45.2	49.0	46.8
All first generation	39.0	49.4	52.3	49.5
10th grade upper secondary school				
EU Countries (EU27)	47.3	57.2	62.0	62.9
Other European (non EU)	49.3	55.6	60.1	62.7
Non Europe	41.1	48.3	53.3	57.0
All first generation	44.3	52.9	58.0	60.4

Table 5. 5th grade - primary school

Dependent variable: standardized National test results in reading

	(1)	(2)	(3)	(4)	first generation: length of stay			
					(5)	(6)	(7)	(8)
gender	0.57*** (0.04)	0.55*** (0.05)	0.55*** (0.04)	0.57*** (0.05)	0.59*** (0.04)	0.58*** (0.05)	0.58*** (0.05)	0.57*** (0.05)
escs	2.90*** (0.04)	2.45*** (0.04)	2.45*** (0.03)	2.46*** (0.03)	2.93*** (0.04)	2.48*** (0.04)	2.47*** (0.03)	2.45*** (0.03)
dialect	-1.55*** (0.09)	-1.40*** (0.09)	-1.39*** (0.09)	-1.36*** (0.09)	-1.50*** (0.09)	-1.36*** (0.09)	-1.34*** (0.09)	-1.35*** (0.09)
foreign language	-3.24*** (0.14)	-3.06*** (0.14)	-3.06*** (0.14)	-2.86*** (0.15)	-3.43*** (0.14)	-3.22*** (0.14)	-3.22*** (0.14)	-2.95*** (0.15)
no. stud_class	0.01 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
other european				-2.91*** (0.32)				-3.39*** (0.31)
non europe				-5.23*** (0.30)				-5.55*** (0.28)
n. siblings		-1.02*** (0.03)	-1.02*** (0.03)	-0.97*** (0.03)		-1.01*** (0.03)	-1.01*** (0.03)	-0.97*** (0.03)
manybooks		2.14*** (0.06)	2.14*** (0.06)	2.11*** (0.06)		2.13*** (0.06)	2.13*** (0.06)	2.11*** (0.06)
no. stud_school			0.00 (0.00)	0.00 (0.00)			0.00 (0.00)	0.00 (0.00)
escs_school			0.05 (0.17)	0.10 (0.17)			0.09 (0.17)	0.11 (0.17)
foreign1st generation	-5.20*** (0.18)	-4.76*** (0.18)	-4.76*** (0.18)	-2.10*** (0.24)				
foreign 2nd generation	-3.57*** (0.16)	-3.11*** (0.16)	-3.12*** (0.16)	-3.24*** (0.16)	-3.41*** (0.16)	-2.98*** (0.16)	-2.99*** (0.16)	-3.19*** (0.16)
one_year					-11.32*** (0.39)	-10.88*** (0.39)	-10.89*** (0.39)	-7.95*** (0.41)
two_4years					-3.80*** (0.26)	-3.43*** (0.26)	-3.44*** (0.26)	-0.83*** (0.28)
five_more					-3.44*** (0.21)	-3.04*** (0.22)	-3.05*** (0.22)	-0.13 (0.26)
Constant	74.33*** (0.26)	74.92*** (0.26)	74.78*** (0.30)	74.78*** (0.31)	74.33*** (0.26)	74.93*** (0.26)	74.78*** (0.31)	74.77*** (0.31)
Macro area dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	410800	379405	379405	368234	399343	368826	368826	368234
R-squared	0.078	0.086	0.086	0.089	0.081	0.089	0.089	0.090
No. clusters	7379	7374	7374	7154	7160	7155	7155	7154

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6. 6th grade – lower secondary school
Dependent variable: standardized National test results in reading

	(1)	(2)	(3)	(4)	first generation: length of stay			
					(5)	(6)	(7)	(8)
gender	2.94*** (0.05)	2.91*** (0.05)	2.93*** (0.05)	2.92*** (0.05)	2.95*** (0.05)	2.93*** (0.05)	2.94*** (0.05)	2.93*** (0.05)
escs	4.88*** (0.05)	4.07*** (0.05)	3.80*** (0.04)	3.81*** (0.04)	4.91*** (0.05)	4.11*** (0.05)	3.83*** (0.04)	3.81*** (0.04)
dialect	-3.44*** (0.10)	-3.16*** (0.10)	-3.06*** (0.10)	-3.04*** (0.10)	-3.37*** (0.11)	-3.10*** (0.10)	-2.99*** (0.10)	-3.01*** (0.10)
foreign language	-5.13*** (0.14)	-4.77*** (0.14)	-4.79*** (0.14)	-4.36*** (0.15)	-5.66*** (0.15)	-5.26*** (0.15)	-5.29*** (0.15)	-4.86*** (0.14)
no. stud_class	0.17*** (0.02)	0.16*** (0.02)	0.13*** (0.02)	0.13*** (0.02)	0.17*** (0.02)	0.16*** (0.02)	0.13*** (0.02)	0.13*** (0.02)
other european				-1.87*** (0.32)				-3.78*** (0.31)
non europe				-4.82*** (0.29)				-6.28*** (0.27)
n. siblings		-1.58*** (0.03)	-1.58*** (0.03)	-1.53*** (0.03)		-1.59*** (0.03)	-1.59*** (0.03)	-1.52*** (0.03)
manybooks		3.06*** (0.08)	3.10*** (0.08)	3.00*** (0.08)		3.00*** (0.08)	3.03*** (0.08)	3.01*** (0.08)
no. stud_school			0.00** (0.00)	0.00** (0.00)			0.00** (0.00)	0.00** (0.00)
escs_school			1.40*** (0.18)	1.50*** (0.19)			1.49*** (0.19)	1.51*** (0.19)
foreign1st generation	-8.30*** (0.18)	-7.64*** (0.18)	-7.66*** (0.18)	-5.46*** (0.24)				
foreign 2nd generation	-3.74*** (0.17)	-3.02*** (0.17)	-3.05*** (0.17)	-3.33*** (0.17)	-3.42*** (0.17)	-2.73*** (0.17)	-2.75*** (0.17)	-3.04*** (0.17)
one_year					-15.23*** (0.31)	-14.57*** (0.31)	-14.61*** (0.31)	-11.01*** (0.34)
two_4years					-6.67*** (0.29)	-6.05*** (0.29)	-6.09*** (0.29)	-2.98*** (0.31)
five_more					-5.56*** (0.22)	-4.96*** (0.21)	-4.98*** (0.21)	-1.66*** (0.26)
Constant	59.91*** (0.36)	60.80*** (0.36)	61.02*** (0.36)	61.02*** (0.37)	59.86*** (0.37)	60.77*** (0.36)	61.01*** (0.37)	60.98*** (0.37)
Macro area dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	436670	412474	412474	399229	423262	399856	399856	399229
R-squared	0.167	0.178	0.179	0.182	0.170	0.180	0.182	0.183
No. clusters	5666	5666	5666	5581	5585	5585	5585	5581

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7. 10th grade – lower secondary school
Dependent variable: standardized National test results in reading

	(1)	(2)	(3)	(4)	first generation: length of stay			
					(5)	(6)	(7)	(8)
gender	2.48*** (0.11)	2.43*** (0.11)	2.61*** (0.11)	2.61*** (0.11)	2.48*** (0.11)	2.43*** (0.11)	2.61*** (0.11)	2.61*** (0.11)
escs	1.35*** (0.04)	0.75*** (0.04)	0.40*** (0.04)	0.38*** (0.04)	1.37*** (0.04)	0.76*** (0.04)	0.40*** (0.04)	0.38*** (0.04)
dialect	-1.12*** (0.12)	-1.12*** (0.12)	-0.87*** (0.12)	-0.88*** (0.12)	-1.09*** (0.12)	-1.09*** (0.12)	-0.83*** (0.12)	-0.87*** (0.12)
foreign language	-3.07*** (0.18)	-2.91*** (0.18)	-2.85*** (0.18)	-2.61*** (0.18)	-4.41*** (0.20)	-4.19*** (0.20)	-4.14*** (0.20)	-2.93*** (0.18)
no. stud_class	0.16*** (0.02)	0.16*** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.16*** (0.02)	0.16*** (0.02)	0.09*** (0.02)	0.09*** (0.02)
other european				-0.47 (0.29)				-2.25*** (0.27)
non europe				-4.55*** (0.30)				-5.91*** (0.28)
n. siblings		-0.32*** (0.03)	-0.29*** (0.03)	-0.24*** (0.03)		-0.34*** (0.03)	-0.31*** (0.03)	-0.23*** (0.03)
manybooks		2.24*** (0.07)	2.08*** (0.07)	2.08*** (0.07)		2.28*** (0.07)	2.11*** (0.07)	2.10*** (0.07)
no. stud_school			0.01*** (0.00)	0.01*** (0.00)			0.01*** (0.00)	0.01*** (0.00)
escs_school			4.94*** (0.31)	4.95*** (0.31)			4.95*** (0.31)	4.95*** (0.31)
foreign1st generation	-4.50*** (0.17)	-4.22*** (0.17)	-4.22*** (0.17)	-2.39*** (0.24)				
foreign 2nd generation	-2.22*** (0.19)	-1.96*** (0.20)	-2.08*** (0.20)	-2.19*** (0.20)	-1.71*** (0.19)	-1.47*** (0.20)	-1.59*** (0.19)	-2.07*** (0.19)
one_year					-13.27*** (0.64)	-12.98*** (0.65)	-12.96*** (0.65)	-10.12*** (0.67)
two_4years					-6.86*** (0.37)	-6.69*** (0.37)	-6.68*** (0.36)	-4.55*** (0.38)
five_7years					-2.64*** (0.32)	-2.40*** (0.32)	-2.38*** (0.32)	-0.43 (0.35)
seven_more					-1.47*** (0.25)	-1.14*** (0.25)	-1.12*** (0.25)	1.25*** (0.31)
Vocational	-9.77*** (0.28)	-9.80*** (0.28)	-8.77*** (0.29)	-8.73*** (0.29)	-9.79*** (0.28)	-9.81*** (0.28)	-8.78*** (0.29)	-8.71*** (0.29)
Lyceum	9.15*** (0.24)	8.90*** (0.24)	6.50*** (0.29)	6.51*** (0.29)	9.16*** (0.24)	8.91*** (0.24)	6.51*** (0.29)	6.51*** (0.29)
Constant	65.37*** (0.45)	65.14*** (0.44)	64.78*** (0.45)	64.70*** (0.45)	65.32*** (0.45)	65.10*** (0.44)	64.74*** (0.45)	64.67*** (0.45)
Macro area dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	388451	371575	371575	371250	388451	371575	371575	371250
R-squared	0.303	0.308	0.316	0.317	0.303	0.308	0.317	0.318
No. clusters	4409	4405	4405	4405	4409	4405	4405	4405

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1