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High School Choices by Immigrant Students in Italy: Evidence from Administrative Data*

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Abstract

We investigate the educational choices of first- and second-generation immigrant students at the transition between lower-secondary school and high school by exploiting a large longitudinal dataset of about 50,000 students in Italy. We find that immigrant students are less likely to choose challenging academic track high schools compared with their Italian counterparts, after controlling for household characteristics, school fixed effects, and students' performance. We show that systematic differences in teachers' evaluations received by the two groups of students are an important driver of the observed differences in educational choices by immigrant and native students. In particular, after controlling for observable characteristics, we find that immigrant students are more likely to be formally advised by their teachers to choose vocational or technical high schools rather than academic tracks, reflecting a discrimination bias that has not previously been emphasized in the literature. This suggests the role of a new dimension of policy intervention aimed at reducing the possibility of teachers' induced discrimination based on implicit stereotypes.

JEL codes: I21, I24, I26, I28
Keywords: immigrant students, high school choice, academic track, discrimination biases, implicit stereotypes

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1. Introduction

While the effect of migration on the labor market has been widely investigated since the end of the 1970s, the educational achievements of children with a migratory background is a relatively new topic in the literature. This is particularly true for countries such as Italy, where immigration is a recent phenomenon. In this paper, we contribute to this new strand of literature about the effects of migration on educational achievements by focusing on the transition from lower (grades six to eight) to higher-secondary school (grades nine to thirteen) in Italy. This transition is particularly important because it marks the switch-over between an education based on state-wide uniform programs to an education providing highly heterogeneous knowledge bases and competencies. Exploiting this discontinuity, we investigate the factors explaining why a large fraction of migrant children enroll in shorter and less challenging high school tracks compared with native students.

Our analysis is based on a novel and exclusive dataset that follows a random sample of 50,000 students in Italy from school year (sy) 2012/13 (when they were in grade five) to sy 2016/17 (when they reached grade nine). The administrative data collected for our dataset allow us to investigate the educational achievements of students of foreign origin compared with their Italian counterparts. In particular, in the first part of the paper, we investigate the role played by school performance, socio-economic background and teachers' recommendation in shaping students' high school choices. To the best of our knowledge, this is one of the first papers to investigate these questions by exploiting the longitudinal dimension of a representative sample of the general student population. A further novelty of our data is that they allow exploring the effect of teachers' recommendations on the school choices of foreign and Italian students. This is especially interesting given that it has been shown in the literature that teachers can suffer from (possible) stereotypes and biases when dealing with foreign students (Alesina et al. 2018). Therefore, their recommendations can be quite relevant in explaining the different high school choices of Italian and foreign students.

Our results show that first-generation immigrant students are on average less likely to choose academic school tracks compared with Italian students, with a gap ranging between 9 and 13 percentage points depending on the econometric specifications. Even after controlling for students' skills, lower-secondary school performance, parental occupation and education, as well as the heterogeneity across lower-secondary schools, the estimated gap in the likelihood of attending an academic track is strongly significant. Gaps for second-generation immigrants are smaller and range from 2 to 6 percentage points, suggesting that the time spent in Italy can account for part of (but not all) the gap.

We also explore the mechanisms underlying the different school track choices of immigrant and native students. We find that immigrant students systematically receive lower grades compared with Italian students despite being in the same quintiles of the distribution of the blindly-graded national INVALSI tests. Such differences in scores in blindly- and non-blindly-graded tests confirm the possible existence of a discrimination bias against immigrants that has already been highlighted in the literature (Alesina et al. 2018). Furthermore, we show that students' grades in lower-secondary schools affect the recommendations that they receive from their schoolteachers, which in turn are strongly correlated with the final high school choices of students. This suggests that foreign students' 'discrimination' may contribute to the observed difference in school choices. Finally, we show that the gap in choosing academic school tracks persists among students (immigrant vs. native) who are recommended to choose them. This finding indicates that the average gap in school choice cannot be simply explained by institutional settings or teachers' stereotypes about immigrants.

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The remainder of this paper is structured as follows. Section 2 illustrates the characteristics of the Italian school system and section 3 relates our contribution to

the literature focusing on the school performance of foreign students in Italy. Section 4 describes our dataset, provides descriptive statistics and outlines the variables that we use in our analysis. In section 5 we explain our empirical strategy, while in section 6 we present the results of our analysis, and in section 7 we perform sensitivity tests. Finally, section 8 concludes.

2. Italian school system

In Italy, students enter school at the age of six and education is compulsory (and free of charge, unless attending a private school) until the age of sixteen (grade ten). Italy has a three-level school system: primary education covers grades one through five, lower-secondary education goes from grades six through eight, and higher-secondary education goes from grade nine through thirteen. Cost-free state-run institutions represent the vast majority of all Italian schools: in sy 2017/18, more than 95% of all Italian students in grades one through thirteen attended a public school.

Primary and lower-secondary schools all over the country adopt a uniform national program of instruction approved by the Ministry of Education. Students who finish grade eight – generally at the age of fourteen – take a final exam to gain a lower-secondary education license (*Diploma di istruzione secondaria di primo grado*) which gives them access to higher education. When entering higher-secondary schools, students can choose one of three main tracks: 1) lyceums (*licei*), 2) technical schools (*istituti tecnici*) and 3) vocational schools (*istituti professionali*). Lyceums provide a general and broad knowledge base primarily designed to favor the access to tertiary education. They encompass nine different (and separate) fields of study, such as the *licei classico* – focusing on subjects such as literature, Latin, Greek, and more generally humanities – the *liceo scientifico* – that focuses on math, physics, and hard sciences – and the *liceo delle scienze umane*, focusing on social sciences. Technical schools train students in a profession, while still granting them full access to university. They include the two main fields of economics and technology, with eleven different types of schools. Vocational schools train students

in a specific profession (with an approach that should be more hands-on compared with technical schools), while also allowing attending university. They comprise eleven separated and different fields of study, from agriculture to health and social professions. All of these are five-year-long tracks. Besides the three main paths, students who are unwilling to access tertiary education could also take a fourth track – three or four years long – named *istruzione e formazione professionale* (professional instruction and training), which trains in a profession but does not grant access to tertiary education.

In sy 2019/20, considering the total number of students moving from lower- to higher-secondary education, about 55% chose a lyceum (42% males and 68% females), about 31% a technical school (42% males and 19% females), and about 14% a vocational school (16% males and 13% females), while only slightly more than 1% enrolled in professional instruction and training (MIUR 2019a).

Different schools generally offer different tracks (even though a few schools offer more than one), therefore determining a quite rigid separation between tracks. Moreover, although in principle students may switch track, in practice this can be difficult as it requires filling in knowledge gaps in some subjects, which explains why track changes are rare. The only notable exception is represented by students who fail their first high school year (grade nine) in a challenging track (such as a lyceum) and move to what is generally perceived as a less challenging school (such as a technical, or even a vocational school). As a result of this institutional arrangement, while still attending compulsory education, students are separated into different tracks and pursue different educational careers. A choice made when students are fourteen is fundamental to determine their future career, as in the Italian labor market access to universities is important in determining both the likelihood of finding a job and the future salary of workers. Although only a few educational tracks do not grant access to tertiary education, a higher percentage of vocational or technical school students do not enroll in universities compared with lyceum students. The latest available data show that only about 20% of students holding a vocational school degree enroll in university, while the same data for students holding degrees from technical schools or lyceums are 44% and 92%, respectively (Istat 2016).

Lower-secondary school professors assist students in their choice of higher education, giving each student a recommendation (*consiglio orientativo*) regarding the track that should better suit their skills and attitudes. Although students are not legally required to follow their teachers' advice, several high schools (in particular the most prestigious ones) informally use these recommendations as a screening device when applicants exceed the maximum number of people who can be enrolled.

At the end of high school – in grade thirteen – students have to take a second national exam to obtain a higher-secondary education diploma (*Diploma di istruzione secondaria di secondo grado*), which is required to access tertiary education and the university system. It should be noted that compulsory education ends in grade ten, when students are sixteen. Therefore, many students drop out before graduating from high school. In 2019, in Italy about 13.5% of 18-24 year-old individuals had completed at most lower-secondary education and were not in further education, compared with the European Union average of 10.2% (Eurostat 2021). According to MIUR (2019b), early school leaving is quite rare in lyceums (1.8% in sy 2016/17), but more frequent in technical schools (4.3%) and especially vocational schools (7.7%), as well as professional instruction and training (9.9%).

3. School performance of foreign students

Over the last 30 years, Italy has become the destination for a growing number of people migrating from Eastern Europe, Africa, South America, and the Far East. The total number of foreigners living in the country has grown from about 625,000 in 1991 to more than 5,255,000 in 2019, and foreign people now represent more than 8.3% of the total population. At first, most immigrants were male young adults looking for better job opportunities. However, once settled in the country, many of these adults were joined by their families or formed a family in Italy. As a result, the number of children of foreign origin has also increased. The population of foreign students in the Italian school system has grown from about 25,000 individuals in sy 1991/92 to more than 840,000 in sy 2017/18, and students of foreign origin now represent more than 10% of the total

population attending Italian primary and lower-secondary schools. The share has also been growing in higher-secondary schools, where it has reached 7.3% (MIUR 2019c).

While the effect of migration on the labor market has been widely investigated since the end of the 1970 (see, for example, Borjas and Chiswick 2019; Grossman 1982; Borjas 1985 Card 1990; Altonji and Card 1991; Friedberg and Hunt 1995; Friedberg 2000; Dustmann et al. 2005; Brücker and Jahn 2011; Docquier et al. 2014), the educational achievements of children with a migratory background is a relatively new topic in the literature and the most relevant contributions have been produced over recent years (Chiswick and DebBurman 2004; Cortes 2006; Colding et al. 2009; Dustmann et al. 2010; Brunello and Rocco 2013; Ruhose and Schwerdt 2016; Lemmermann and Riphahn 2018; Galloway and Gjefsen 2020).

Anecdotal evidence, descriptive statistics and a growing body of literature show that the integration of immigrant students in the Italian school system is problematic, especially at the higher-secondary school level. In fact, when reaching high school, students with a migratory background tend to perform poorly: on average, they obtain worse results on standardized tests, choose shorter (or less challenging) educational tracks, and drop out of school more frequently than their native counterparts. Problems are more severe for children who are born abroad (first-generation migrant students) and reach Italy after having attended some years of school in their country of origin. Besides experiencing a cultural shock, these students have to learn a new language, adapt to the new organization of the school system, and assimilate new disciplinary contents. Moreover, many of them suffer from school segregation and disadvantaged economic conditions, as they often live on the outskirts of large cities – in areas characterized by public housing and white flight – and their parents often work in poorly-paid jobs. The situation is somewhat less difficult for children who are born in the country to foreign parents (second-generation students), as they often enjoy higher language skills and have never directly experienced migration.

Following a well-established sociological tradition, both 'primary' and 'secondary'

factors (Boudon 1974) might explain the poor educational performance of students of foreign origin. Their cultural and socio-economic conditions could directly influence their individual cognitive and non-cognitive skills (Heckman et al. 2006)such as language abilities, therefore limiting their performance in high school. At the same time, the social background of individuals could indirectly influence their decision to choose a specific school track or drop out of school, influencing their perception of the costs and benefits associated with each choice. Other factors such as the institutional structure of the school system – early inclusion in the system of education, school segregation, school tracking, etc. – may also play a role. In terms of school performance, recent research confirms that in Italy foreign students achieve worse results than native ones. Several papers focus on the various waves of the Program for International Student Assessment (PISA) run by the OECD, which regularly measures the school performance of tenth-grade students in mathematics, language, and science through standardized tests. Examining the 2006 wave of the PISA test, Di Bartolomeo (2011) shows that foreign students perform worse than native ones, even after controlling for their socio-economic and cultural backgrounds, aspirations, and ethnic school segregation dynamics. Differences also persist for second-generation students, albeit to a lesser extent. Along the same lines, Azzolini et al. (2012) and Schnell and Azzolini (2015) – investigating the 2009 and the 2012 waves of the PISA test – find that both first- and second-generation immigrant students underperform compared with native students.

Analyzing the data from the labor force survey run by ISTAT (the Italian statistical office) – and therefore adopting a research perspective that extends beyond results obtained in standardized tests – Azzolini and Barone (2013) find that 15- to 19-year-old people with a migratory background have higher drop-out risk and enroll more often in vocational tracks compared with native students. The gap is at a maximum for first-generation immigrant students, while it decreases for second-generation ones. Nonetheless, the results are highly heterogeneous, with the country of origin and parents' socio-economic conditions playing a crucial role in explaining differential results. Similar findings are obtained by Murat (2012) based on the 2006 wave of the PISA program,

focusing on 29 countries with more than 3% of immigrant students. The author shows that in Southern Europe "variables related to schooling – the distribution of immigrant and native students across school types and grades – and countries of origin explain most of the immigrant gap" (p. 613). Therefore, the tracking system appears to play a significant role in explaining high school results of students of foreign origin.

Besides attaining lower results at school tests and dropping out of school more frequently than their native fellows, the available evidence shows that foreign students disproportionately engage in less challenging high school tracks (Dalla Zuanna et al. 2009). This trend may have relevant consequences for the well-being of children with a migratory background, influencing both their future educational attainments and – in some cases – their likelihood of accessing tertiary education.[1] Differences in previous school performance and households' economic conditions may contribute to explain the different high school choices of natives and foreign students. A lower-performing school career and the need to rapidly earn a living may justify the choice of a track that – at least in principle – guarantees an earlier entry in the labor market. Nonetheless, choice differences also persist after controlling for these factors (proxied by school results and the socio-economic condition of families). Therefore, other determinants may be important, whereby the recent literature has focused on three of them. The first determinant relates to students' information and awareness about the different alternative tracks available (Dawes and Brown 2002; Hoxby and Avery 2012); the second refers to students' soft skills (Hanushek and Wößmann 2006; Heckman and Kautz 2012; Heckman et al. 2013) – namely, the aspirations and motivation in pursuing academic studies (Mookherjee et al. 2010; Dalton et al. 2016; Genicot and Ray 2017), while the third – dating back to an old sociological tradition (Clark 1963) – focuses on the role played by schools and teachers, and especially on their activities of orientation and career advice (Resh 1998; Boone and Van Houtte 2013).

[1]The role of early tracking in shaping school results and the future career of students has been widely investigated by the literature. While a strand of literature (Hanushek and Wößmann 2006; Brunello and Checchi 2007; Van de Werfhorst et al. 2007; Wößmann 2009; Malamud and Pop-Eleches 2011; Guyon and Huillery 2021) finds a negative effect and underlines its role in increasing inequalities, other studies find no effect (Duflo et al. 2011; Dustmann et al. 2017).

Only a few studies focus on the factors that may explain the different high school choices of immigrants and native students in Italy, all of which suffer from relevant data limitations associated with the small size of the population investigated, the choice of a purely qualitative approach, or the lack of information on relevant characteristics of individual students. Using survey data related to a group of Italian regions, Barban and White (2011) show that first- and (to a much lesser extent) second-generation foreign students have a higher probability of choosing a vocational school compared with native students, even after controlling for lower-secondary school results, country of origin, and socio-economic characteristics of immigrants. Building on Contini and Scagni (2011), Ress and Azzolini (2014) and Contini and Azzolini (2016) analyze a cohort of about 6,000 students (13% with foreign origin) entering high school in sy 2010/11 in the province of Trento, in Northern Italy, and find that prior school performance plays a lesser role compared with other European countries (Boado 2011; Jackson et al. 2012), while students' social background is quite relevant in explaining different school choices. Interestingly, when focusing solely on male students, differences in school choices between foreign and native students persist even after controlling for prior performance and social background covariates, indicating that "secondary factors" play an important role in shaping school track choices. The main limitation of these studies lies in their limited external validity, as the province of Trento has a very small school population and quite peculiar characteristics within the Italian landscape.

Addressing the role played by students' information about the characteristics of the different high schools that they can attend, Giustinelli and Pavoni (2017) analyze a small sample of about 900 eighth-graders in the town of Vicenza in sy 2011/12, providing valuable insights despite a small sample size. Based on three waves of surveys, they show that children have only partial awareness of the set of available tracks and gather information mostly on the preferred alternatives. Moreover, the authors underline that children from disadvantaged families (including children of foreign origin) have lower initial information and during eighth grade "acquire information at a slower pace, particularly about college-preparatory schools" (p. 93). As for the role of teachers and

their practices in counseling educational careers, Bonizzoni et al. (2016) use a purely qualitative approach involving interviews with 26 instructors and headmasters to argue that professors' advice is not exclusively determined by students' school performance. The authors underline three reasons why professors refrain from suggesting university-oriented tracks to foreign students: the possible lack of linguistic and cultural resources needed to complete these studies, the economic resources needed to comply with a long educational career, and the cultural resources needed by immigrants' households to contrast the cooling-out attitude that teachers may display.

In a recent attempt to increase the number of high-potential foreign students who will attend challenging high school tracks, the program *Pari opportunità nell'apprendimento* (Equality of opportunities in learning) funded by a group of foundations has highlighted the role played by information, aspirations and motivations in shaping students' choices (Carlana et al. 2018). The program randomly assigned a treatment – targeted to potential foreign students and based on academic tutoring and career counseling – to a sample of lower-secondary schools in Northern Italy. The results – which are different for male and female students – show a statistically significant and quite large increase in the probability of treated males attending a lyceum or a technical high school compared with the control groups, closing the gap with natives. Interestingly, no effect has been found on foreign females, whose initial gap with natives was insignificant. The authors underline that most of the effect is driven by the increase in aspirations and confidence in students' own abilities rather than cognitive skills.

While these studies are very promising, the mechanisms that lay behind the choice of a high school track are not yet fully understood. In this paper, we contribute to the literature by investigating the transition from lower- to higher-secondary school in Italy, focusing specifically on the population of foreign students. In particular, we check whether – after controlling for skills (proxied by the outcomes of national standardized tests run by INVALSI, the national institute for the assessment of the educational system) and other potentially relevant covariates – a difference still emerges that makes foreign students much more likely to choose professional schools compared with their Italian counterparts,

and we assess the driving forces behind the emergence of such bias.

4. Sample, variables, and descriptive statistics

In Italy, studies jointly analyzing the performance of students of foreign origin and their transition to upper-secondary education have often been constrained by data availability, whereby many of them only include cross-sectional data or are based on small local samples. The novelty of our analysis is that it builds on a new sample that besides being statistically representative of a cohort of students, follows them over time, generating panel data. More specifically, we use administrative data to obtain a sample of about 50,000 Italian students – randomly selected out of the about 500,000 students in their cohort – who attended their last year of lower-secondary school (grade eight) in sy 2015/16. We followed these students for the first year of high school (to sy 2016/2017) and tracked information on their previous school careers back to sy 2012/2013 (when they attended grade five).

This operation was possible by merging anonymous datasets coming from the Ministry of Education (MIUR: Anagrafe degli studenti) and INVALSI. Combining the two sources of information, we enriched students' administrative records coming from MIUR (reporting the grades that teachers assigned to students in language and math in 2016, students' fail or pass in previous years, teachers' high school recommendation, etc.) with further information from INVALSI about students' scores in language and math at national standardized tests (in grades five and eight) and background information on students' families. The price that we pay for this rich dataset is that we lose some cases every time we implement a merge, because some students may disappear in some years in some data sources. Therefore, we use the variables that are most consistently available in our dataset: specifically, teacher-assigned scores of students in eight grade, eighth-grade INVALSI test scores, and final school marks, which is the average exam grades of students in the eighth grade.

Despite the limits of our dataset, its longitudinal dimension – combined with the large

size and representativeness of the sample – makes our study quite unique in this field. Our main working sample comprises 46,264 students from 6,899 schools, 1,913 of whom are first-generation immigrants (4.13%), 2,449 second-generation immigrants (5.29%), and 41,902 Italian citizens (90.57%). In terms of gender and geographical composition, the sample comprises 22,633 (48.92%) female and 23,631 (51.08%) male students. About 25.56% of the students in the sample are enrolled in a lower-secondary school located in the north-west of Italy, 16.71% in the north-east, 18.56% in the center, and 39.18% in the south and islands.

Moving to descriptive statistics, in Figure 1 we present the distributions of three variables in sy 2015/16 when students were in grade eight: the INVALSI mathematics and language scores, teacher-graded mathematics and language scores, and students' final marks. We see that on average, Italian students outperform immigrants in each category. Throughout the paper, we mainly focus on the determinants of the probability of choosing a lyceum (academic school), the type of high school at the end of which students are more likely to access tertiary education. Our dependent variable (i.e. students' high school choice) belongs to one of three categories, namely academic schools, technical schools, and vocational schools. Only 2,714 (5.87%) observations are missing in our working sample, most likely referring to students who choose a professional instruction and training track, whose data are recorded at the regional level and not included in the national administrative data sets. Alternatively, missing observations could refer to students who drop out of the school system after lower-secondary education. Excluding these students from our analysis or assuming that they decided to attend a professional instruction and training school does not alter our findings.[2]

In Figure 2, we report the unconditional averages of students' school choices. We see that only 25% of first-generation immigrants choose 'academic track high schools', while this share is 35% for second-generation immigrants and 52% for Italian students. Figure 3 shows the probability of choosing academic track schools over the quintiles of INVALSI mathematics scores (left panel) and over the final marks in lower-secondary schools

[2]These results are available upon request.

(right panel). We observe that the gap in the choice of academic track schools between immigrants and Italians widens when moving to higher quintiles of both mathematical skills and lower-secondary school performance. This indicates that the gap is not simply accounted for by the heterogeneity of students' skills.

One of the underlying mechanisms that can account for the gap in school choice is teachers' discrimination towards immigrants. As documented by Alesina et al. (2018),teachers can have an explicit or implicit bias against immigrant students. In Figure 4, we plot the average grades in mathematics and language assigned by schoolteachers in grade eight over the quintiles of scores of the blindly-graded INVALSI tests. The figure shows that both first- and second-generation immigrants obtain lower grades from their teachers compared with Italians, despite similar results in the blindly-graded INVALSI tests. This is true for both mathematics and language scores. Following this descriptive evidence, later in the paper we further investigate the role of final lower-secondary school grades (assigned by teachers) in determining the school recommendations that students receive from their teachers, as well as the extent to which these recommendations affect final school choices.

5. Empirical strategy

As described in section 2, even though all but professional school tracks give access to tertiary education, students coming from a lyceum enroll in university much more frequently than their counterparts coming from technical and vocational schools. In this section, we explore the reasons that lay behind the choice of 'academic track high schools' (which we define as any of the nine possible lyceum types) for Italian and foreign students.[3]

We rely on a linear probability model to estimate the differences in the probabilities of choosing an academic track high school by native and immigrant students. More specifically, we adopt the following specification:

[3]In a further robustness section, we concentrate on more restrictive definitions of academic track high schools; for example, limiting our attention to more challenging types of lyceums (namely classical and scientific academic tracks).

$$Y_i = \alpha + \beta_1 * first_i + \beta_2 * second_i + X_i^{'}\Gamma + \delta_s + \epsilon_i; \quad (1)$$

where Y_i is the outcome variable that takes the value of 1 if student i chooses an academic track high school in sy 2016/17, and 0 otherwise; $first_i$ is a dummy variable that takes the value 1 if student i is a first generation immigrant; $second_i$ is a dummy variable that takes the value of 1 if student i is a second generation immigrant, $X_i^{'}$ is a vector of control variables including gender, a set of performance indicators measured in sy 2015/16 (standardized language and mathematics scores, teacher-assigned language and mathematics score, final lower-secondary school marks), parental education, parental occupation, number of books at home, and number of siblings; δ_s captures school fixed effects, controlling for the unobserved time-invariant heterogeneity across lower-secondary schools; ϵ_i captures the unobservable characteristics of student i, and α is constant. The parameters of interest are β_1 and β_2. Standard errors are clustered at the lower-secondary school level.

6. Main results

In this section, we present and discuss our main findings on the probability of choosing an academic track high school. We start by presenting the results in Table 1 when not controlling for the observable characteristics of students. We then gradually include these control variables into our specification to better understand the dynamics behind the choice of academic track high schools. Our results indicate that even after controlling for gender and skills (proxied by the INVALSI tests' scores), the first- and second-generation immigrant students are (respectively) 13 and 9.5 percentage points (p.p.) less likely to enroll in academic track high schools compared with native students. As already noted, the INVALSI scores are a good proxy for the skill set of these students since these scores are objectively graded. Regression results show that students' mathematics and language skills are strongly and positively correlated with the probability of choosing an academic track high school. Furthermore, female students are 21 p.p. more likely to attend academic

track schools.

The inclusion of school dummies into the model (see column (4) of Table 1) reduces the magnitude of the estimated coefficients in absolute terms. It is worth noting that controlling for schools' heterogeneity also helps us to control for the students' heterogeneity determined by their families' living place. In fact, in Italy students are more likely to attend the lower-secondary school that is closest to their neighborhood. Interestingly, after controlling for these variables, the probability of first- and second-generation immigrants choosing an academic track school is still 9.5 p.p. and 6.2 p.p. lower compared with Italian students, respectively.

In Table 2, we add further measures of students' performance among our regressors, namely instructor-assigned grades in mathematics and language, and final marks assigned in the state exam granting the lower-secondary education license. It is important to note that these additional regressors reflect the subjective evaluation of each instructor and therefore they are much less standardized (objective) than INVALSI scores.

We take into account teachers' assigned student grades in mathematics in the regression results reported in column (1). While these grades are strongly and positively correlated with the probability of choosing academic track schools, the gap in school choices between immigrant and native students remains large and statistically significant. Similar results are obtained when controlling for teachers' assigned student grades in language (in column (2)) and the students' marks in their lower-secondary license final exam (in column (3)). The specification in column (4) – allowing for all controls at the same time – confirms the existence of a significant gap in academic track school choices, at 8.4 p.p. for the first-generation immigrants and 4.2 p.p. for the second-generation ones. Finally, by focusing separately on female and male students in Columns (3A) and (3B) of Table 2, respectively, we observe a significant gap in school choices by immigrant students of both genders with respect to their native counterparts; although, this gap is slightly larger for female immigrant students (vs. female Italian students) compared with male students.

In Table 3, we report results from a model specification in which we further control

for students' background characteristics, such as parental occupation, parental education, cultural background (roughly proxied by the number of books at home), and number of siblings. First, we add to the specification in column 3 of Table 2 – which is our preferred specification – information on parental occupation and education. We estimate a 7 p.p. (2.5 p.p.) difference in academic track school choices for first- (second-) generation immigrants even after taking parental background into account (see Table 3, column (1)). Although of smaller magnitude compared with Table 2 (recall that students' parental background is strongly correlated with their status of immigrant), the existence of a significant gap in school choice between immigrant and native students is confirmed.

In column (3) of Table 3, we also control for the number of siblings and books at home, finding a 6 p.p. difference in the probability of choosing an academic track school between first-generation immigrants and natives. However, the gap disappears for second-generation immigrants, which suggests that household-level characteristics – in addition to students' skills and parental background – help to almost entirely explain the differences in school choices across students. It should be noted that the model including these new regressors suffers from missing observations. To check that our results are unaffected by these missing cases, in column (2) we replicate the model of column (1) eliminating the observations that are missing in column (3). Accordingly, we find that the relevant coefficients in columns (1) and (2) are not significantly different.

6.1. School track recommendations

One of the underlying mechanisms for our main findings on school choice rests on the recommendations that immigrant students receive from their school teachers.

We first investigate whether teachers' advice differs across immigrants and natives. In Figure 5, we highlight the average probabilities of being recommended to choose an academic track school over the quintiles of INVALSI mathematics scores (left panel) and students' final marks (right panel). We find a systematic gap in the recommendations that native and immigrant students receive from their teachers. This gap is especially

pronounced for the pool of students with high scores in mathematics, suggesting the existence of a negative bias against immigrant students. Interestingly, the observed gap shrinks when focusing instead on teachers' assigned final marks (which are attributed based on teachers' subjective assessments). This seems to indicate that teachers mainly rely on the grades that they assign (rather than standardized test results) in forming their evaluations, presumably under the assumption that such grades (being based on all tests that a student takes throughout his/her entire career in lower-secondary school) more precisely reflect the capabilities of a student compared with the INVALSI test scores.

Table 4 reports the regression results on the probability of receiving the recommendation to attend an academic track school. In the regression, we control for students' final marks along with the standardized INVALSI test scores in mathematics and language. Column (1) shows the existence of a significant gap between the recommendations received by immigrant and native students. Even after controlling for teachers' perceptions of students' skills (as proxied by final marks), immigrants are about 4.5 p.p. less likely to be advised to choose an academic track school. In columns (2) and (3), we show our results separately for female and male students, respectively. Interestingly, the gap in recommendations seem to be driven entirely by female students.

In terms of the correlation between teachers' recommendations and the actual school choices of students, Figure 6 shows the probabilities associated with the different school choices of immigrants and natives conditional on their teachers' advice. Quite importantly, only 74% of first-generation immigrant students who are advised to choose an academic track high school actually do so. The corresponding figure is 80% for second-generation immigrants, and 89% for native students. This empirical observation indicates that even if immigrant students overcome any bias or stereotype, other factors affect their decisions to choose an academic track. Interestingly, the large gap between immigrants and natives is only observed for academic track school choices, while no relevant differences are observed for other school types.

Table 5 shows the results of regressions on the probability of choosing an academic

track while controlling for the teachers' advice to the right-hand side of the equation. As information on these recommendations is not available for every student, column (1) shows the results that we obtain from a sample excluding missing observations. As can be seen, the estimated gap in the academic track school choices of immigrant and native students is perfectly in line with what we reported above, implying that missing cases should not be driving our results.

Column (2) accounts for teachers' recommendations, finding that the students who are advised to choose an academic track by their teachers are 57 p.p. more likely to choose that kind of school compared with the students who are advised to choose a technical or vocational school track. Columns (3) and (4) show that the importance of teachers' recommendations is the same for female and male students.

Finally, to gain additional insights into the school choices of immigrant students, we estimate the interaction between being recommended to choose an academic track school and immigrant status. Table 6 shows that the probability of choosing academic track schools when advised to do so is about 7 p.p. smaller for both first- and second-generation immigrants compared with their Italian counterparts who are also advised to choose those schools. While receiving a recommendation to choose an academic track high school indicates that an immigrant student has overcome all possible negative biases and managed to show his/her skills, we still observe a significant gap between the schools choices of immigrants and natives. This suggests that there is more to understand in immigrant students' decisions beyond environmental factors or nationality stereotypes.

7. Robustness checks

We perform two robustness exercises that complement the main findings in our baseline specifications. First, we replicate our main analysis using a matched sample. Second, we rely on an outcome variable that provides more specific information on students' school choices by means of a multinomial probit model.

7.1. Matching

In this section, we present our results for a sample obtained through an exact matching procedure. This allows us to work with an estimation sample in which immigrant and native students are close to each other in terms of academic skills.

First, for any given school, we exactly match immigrant students (first- or second-generation) with their Italian counterparts based on gender and final lower-secondary school marks. Second, among the matched students, we consider only the students whose scores in mathematics and language INVALSI tests are at most fifteen points away from each other in absolute terms. If an Italian student is a match with multiple immigrant student, we allow the number of observations of the Italian student to be repeated (i.e. matching with replacement). The final sample includes 1,503 (after replacement 1,711) Italian students and 1,205 immigrant students (509 first-generation and 696 second-generation immigrants) from 950 schools.

Figure 7 highlights the students' composition of our matched sample. As can be seen from the figure, our matching procedure produces an highly balanced sample in terms of students' skills. Since we match the students within the same schools, our sample allows us to provide an accurate estimate of the gap between the high school choices of immigrants and natives.

The results obtained by applying Equation (1) to the matched sample are shown in Table 7. In column (3) – which reports the results of our preferred specification – we observe that first-generation immigrants are 9 p.p. less likely to attend academic track schools compared with their matched Italian counterparts. However, our estimate for second-generation immigrant students is not statistically different from zero. Indeed, as already argued, the gap in school choices between second-generation immigrants and Italians can be mainly explained by the observable characteristics of these students. The weaker estimate for second-generation immigrants indicates that the time that these students and their parents spend in Italy plays an important role in explaining the differences in school choices.

7.2. Multinomial probit model

As a further robustness check, we adopt a narrower definition of school tracks by focusing on the exact type of school track rather than aggregate labels (vocational, technical, academic schools). For example, academic track schools in Italy can be categorized into several sub-categories (e.g. scientific, classical, linguistic, artistic). Therefore, we create an outcome variable that can take five different values, namely vocational, technical, classical academic track, scientific academic track, and other academic tracks. The scientific and classical academic track schools are the most prestigious tracks in Italy. Since our outcome variable now contains three different categories for the academic track school choices, we base our estimates on a multinomial probit model.[4] We choose vocational schools as the baseline category in our outcome. Unconditional means are presented in Figure 8. We observe that immigrant students are less likely to choose any of the academic track categories compared with Italian students. Only 1.16% and 2.3% of first- and second-generation immigrants choose the classical school track, respectively, compared with 6.13% of Italian students. A similar pattern (albeit with larger numbers) emerges for the scientific academic track, which is chosen by 15% of Italian students but only 4.7% of first-generation and 9% of second-generation immigrant students.

Table 8 reports the marginal effects of explanatory variables on the predicted probabilities of choosing different school tracks when the explanatory variables are held at their means.[5] Panel A presents the results for our full working sample. Our estimates show that first- and second-generation immigrant students are significantly more likely to choose vocational and technical schools with respect to Italian students and less likely to choose scientific, classical, and other academic track schools. This result is consistent with the main findings in our baseline specifications. In Panel B, we re-estimate the model after separating the main sample by gender. This decomposition shows that the

[4] Alternatively, we could employ a multinomial logit model (MLM). Despite the fact that in our setup the independence of irrelevant alternatives assumption is severely violated, the results obtained from MLM (available from the authors on request) are in line with those presented in this section.

[5] The marginal effects presented in Table 8 are estimated ex-post based on the results of a multinomial probit model in which the base category is the professional school track.

gap in the choice of classical schools is mainly driven by the decisions of female students (column (7)), while it is small and non-statistically significant for male students (column (8)). Conversely, the results on the choice of scientific track high schools are mainly determined by male students' choices.

8. Concluding remarks

A recent body of literature has highlighted that the educational choices of individuals with a migratory background systematically differ from those of natives. We have investigated the key mechanisms behind this difference by exploiting a large longitudinal dataset of about 50,000 students in Italy during a period from grade five to grade nine and including high school educational choices at the end of lower-secondary school. Our results show that *ceteris paribus* immigrant students are much less likely than Italian students to choose challenging and academically-oriented high schools. This finding is very strong for first-generation immigrant students (between 9% and 13% depending on econometric specifications) and remains present – although weaker – for second-generation immigrant students (between 2% and 6%), indicating that the time spent in Italy by the students and their households plays an important role in educational choices. More specifically, according to our data, only 1.16% and 2.33% of first- and second-generation immigrant students, respectively, choose to attend a *liceo classico*, compared with 6.13% of Italian students, while 4.76% and 9.02% of first- and second-generation immigrant students, respectively, choose a *liceo scientifico*, compared with 15.68% of Italian students.

We document that besides the heterogeneity in family backgrounds, the quality of lower-secondary schools, and students' performance (in both blindly- and non-blindly-evaluated tests), the root of this difference can be traced back to the existence of systematic differences in teachers' evaluations of immigrant vs. Italian students. Indeed, we find that despite being in the same quintiles of the grade distribution in blindly-standardized tests, immigrant students systematically receive lower evaluations from their teachers in non-blindly-graded assignments. They are also much more likely to

be formally advised by their teachers to choose vocational or technical high schools rather than academic track high schools, with such advice (although not legally binding) playing a key role in explaining students' actual choices. Although the existence of a potential school-related discrimination bias against immigrant students is not new to the literature, the finding of a specific channel working through teachers' recommendations is novel to our contribution.

Interestingly, our results also hold when exactly matching immigrant students with their Italian counterparts based on gender and final lower-secondary school grades, while still controlling for household and institutional characteristics. Even in this case, first-generation immigrant students are overall 9 p.p. less likely to enroll in academic track high schools compared with Italian students, although the difference is no longer statistically significant for second-generation immigrant students. Furthermore, the gap between the high school choices of immigrant students and their Italian counterparts also persists among those students who are recommended to choose an academic high school track, suggesting that stereotypes are important but cannot capture the entire complexity of the phenomenon.

More work is needed to fully understand the driving forces behind the educational choices of students with a migratory background as a preliminary step towards designing appropriate policy interventions. Notwithstanding, our results already highlight a few dimensions that are important for the implementation of effective policies. First, the fact that the discrepancies in school choices between Italian and immigrant students are weaker for second-generation students suggests that cultural barriers and information disadvantages may play a relevant role in biasing educational choices within immigrant households. In this respect, information campaigns on the returns and specificities of different educational tracks may help (especially first-generation) immigrant students and their families to take more informed decisions. Furthermore, the introduction of specific orientation services aimed at overcoming cultural and linguistic barriers may also help in ensuring a smoother and better-informed transition from lower-secondary to upper-secondary education. Second, by highlighting the existence of systematic

differences in teachers' recommendations between Italian and immigrant students after controlling for all relevant observable students' characteristics, our findings identify a specific and novel channel that may lead to discriminatory behavior by teachers. From this perspective, 'training' lower-secondary school instructors to recognize the risk of taking discriminatory decisions against immigrant students based on implicit stereotypes that build on paternalistic attitudes or an incorrect evaluation of the prerequisites needed for a successful career in academically-oriented high schools can be helpful.

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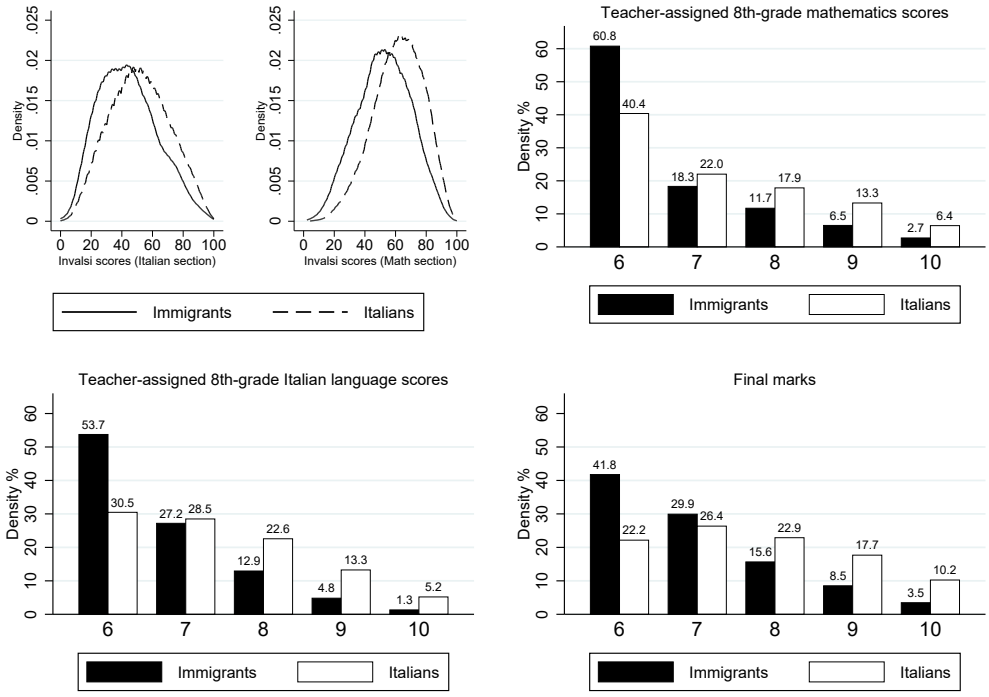
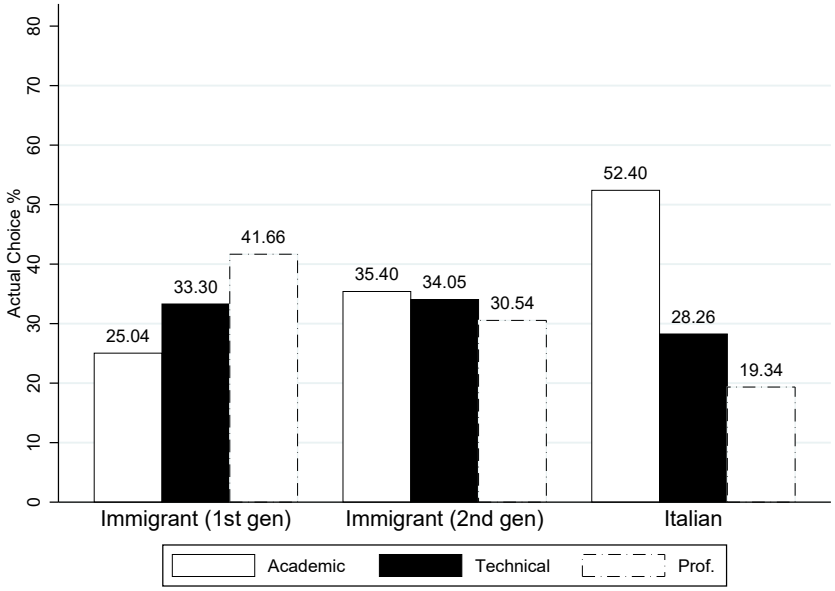
Figures and tables

Figure 1: Students' composition



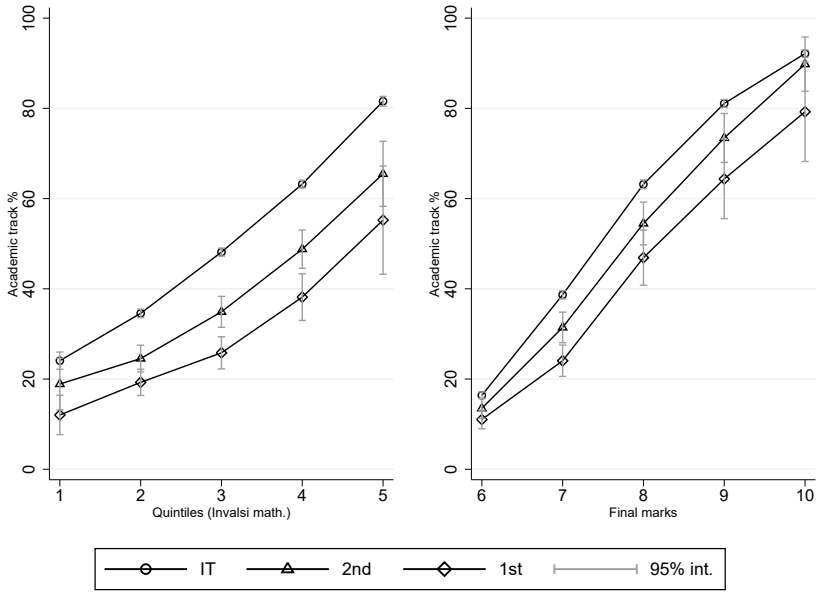
Notes: Figure 1 highlights the students' composition in our main working sample, N: 46,264. Teacher-graded scores refer to the scores of eighth-grade students.

Figure 2: School choices



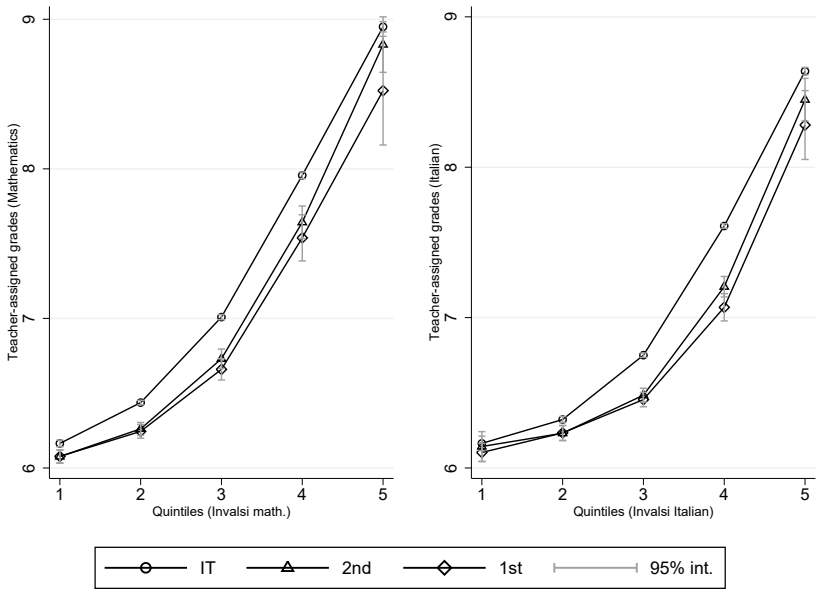
Notes: Figure 2 plots the average probability of choosing high school tracks (academic, technical, professional) by first- (1st gen) and second- (2nd gen) generation immigrants, and Italians. N: 46,264.

Figure 3: Probability of choosing an academic track over mathematic score in INVALSI and over final marks



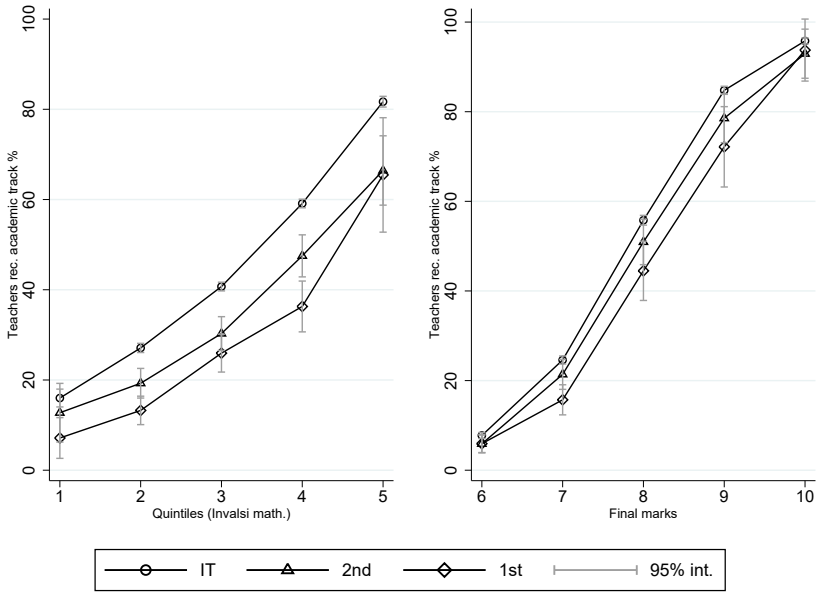
Notes: Figure 3 plots the average probability of choosing an academic high school track over the quintiles in INVALSI mathematics scores (left-figure) and over the final school marks (right-figure) by first- (1st) and second- (2nd) generation immigrants, and Italians (IT). N: 46,264.

Figure 4: Teacher-assigned grades over INVALSI scores



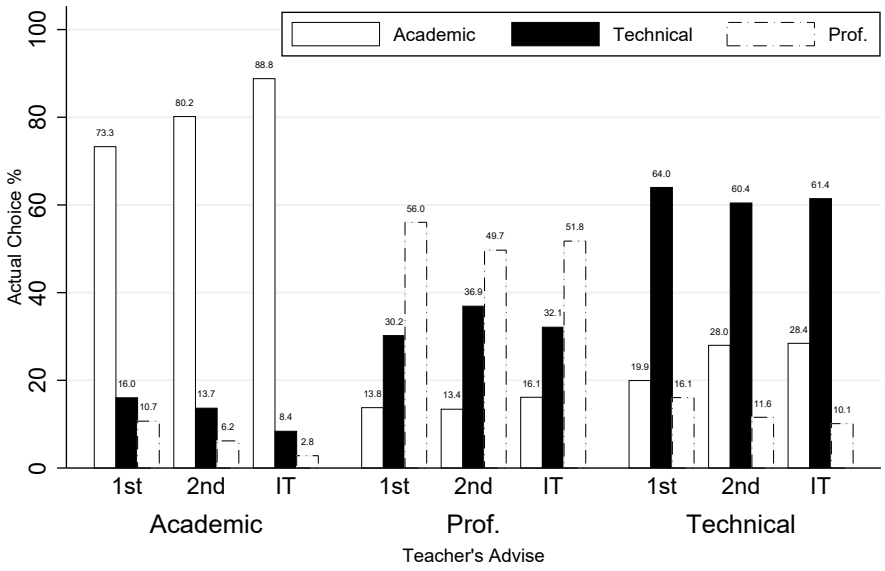
Notes: Figure 4 plots the average teacher-assigned mathematics (left-figure) and Italian (right-figure) scores over the quintiles in INVALSI scores by first- (1st) and second- (2nd) generation immigrants, and Italians (IT). N: 46,264. Teacher-assigned scores refer to the scores of eighth-grade students.

Figure 5: Teacher recommendations



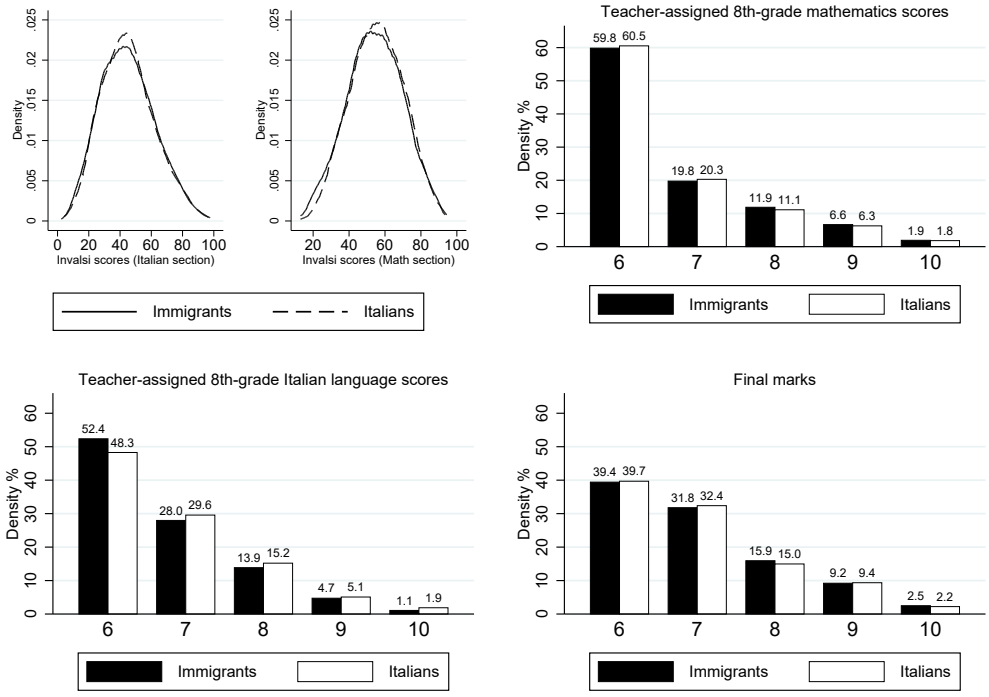
Notes: Figure 5 plots the probability of being recommended by a teacher to choose an academic high school track over the quintiles in INVALSI mathematics scores (left-figure) and over the final school marks (right-figure) by first- (1st) and second- (2nd) generation immigrants, and Italians (IT). N: 36,057.

Figure 6: School choice vs. teacher recommendation



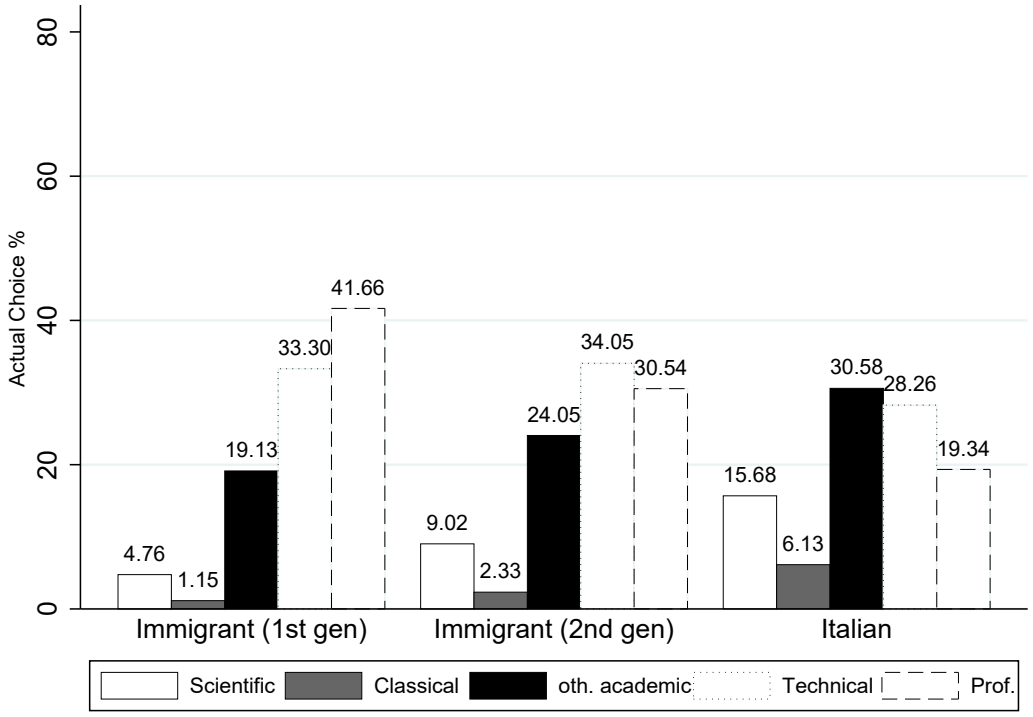
Notes: Figure 6 plots the high school choices conditional on teachers' recommendation by first- (1st) and second- (2nd) generation immigrants, and Italians (IT). N: 36,057.

Figure 7: Students' composition in matched sample



Notes: Figure 7 highlights the students' composition in the matched sample, N: 2,916. Teacher-graded scores refer to the scores of eighth-grade students.

Figure 8: School track choices of students



Notes: Figure 8 plots the average probability of choosing high school tracks (scientific academic, classical academic, other academic, technical, and professional) by first- (1st gen) and second- (2nd gen) generation immigrants, and Italians. N: 46,264.

Table 1: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic	(3) academic	(4) academic
1st gen.	-0.274***	-0.276***	-0.133***	-0.095***
	(0.011)	(0.010)	(0.010)	(0.012)
2nd gen.	-0.170***	-0.170***	-0.095***	-0.062***
	(0.010)	(0.010)	(0.010)	(0.011)
female		0.243***	0.212***	0.214***
		(0.005)	(0.004)	(0.005)
invalsi math			0.004***	0.004***
			(0.000)	(0.000)
invalsi IT			0.008***	0.008***
			(0.000)	(0.000)
school dummies	NO	NO	NO	YES
Observations	46264	46264	46264	46264

Notes: Table 1 reports the results obtained from Equation 1. The dependent variable is the probability of choosing an academic track high school. Column (1) shows the results when there is no control variable included in the model, column (2) shows the results after the inclusion of the female dummy in the regression, column (3) shows the results while controlling for gender, mathematics and Italian language INVALSI scores of students, and column (4) shows the results after the inclusion of lower-secondary school dummies in addition to the control variables in column (3). Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic	(3) academic	(3A) academic (F)	(3B) academic (M)	(4) academic
1st gen.	-0.095***	-0.082***	-0.090***	-0.110***	-0.085***	-0.084***
	(0.012)	(0.012)	(0.012)	(0.022)	(0.017)	(0.012)
2nd gen.	-0.058***	-0.043***	-0.048***	-0.067***	-0.041***	-0.042***
	(0.011)	(0.011)	(0.011)	(0.018)	(0.016)	(0.010)
female	0.190***	0.153***	0.159***			0.145***
	(0.005)	(0.005)	(0.005)			(0.005)
invalsi math	0.001***	0.001***	0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
invalsi IT	0.006***	0.004***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
teacher math	0.101***	0.037***				0.008**
	(0.003)	(0.003)				(0.004)
teacher IT		0.119***				0.076***
		(0.003)				(0.004)
final mark			0.145***	0.134***	0.161***	0.088***
			(0.004)	(0.005)	(0.006)	(0.005)
school dummies	YES	YES	YES	YES	YES	YES
Observations	46264	46264	46264	22633	23631	46264

Notes: Table 2 reports the results obtained from Equation 1. The dependent variable is the probability of choosing an academic track high school. Column (1) shows the results when controlling for gender, mathematics and Italian language INVALSI scores of students, lower-secondary school heterogeneity, and teacher-graded mathematic scores in eighth grade. In column (2), an additional control variable is included, the teacher-graded Italian language scores in eighth grade. In column (3), the final score of students is included as a control variable instead of teacher-graded mathematic and Italian scores. In columns (3A) and (3B), the results of column (3) are replicated separately for female and male students, respectively. In column (4), the full set of control variables are included in the regression. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic	(3) academic
1st gen.	-0.068***	-0.071***	-0.058***
	(0.012)	(0.016)	(0.016)
2nd gen.	-0.025**	-0.021*	-0.011
	(0.011)	(0.012)	(0.012)
female	0.169***	0.171***	0.171***
	(0.005)	(0.005)	(0.005)
invalsi math	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
invalsi IT	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
final mark	0.126***	0.125***	0.124***
	(0.004)	(0.004)	(0.004)
parental background	YES	YES	YES
number of siblings	NO	NO	YES
number of books	NO	NO	YES
school dummies	YES	YES	YES
Observations	46264	41030	41030

Notes: Table 3 reports the results obtained from Equation 1. The dependent variable is the probability of choosing an academic track high school. Gender, INVALSI and teacher-graded scores, and lower-secondary school dummies are included in three columns. Additionally, in column (1), dummy variables for the education and occupation of fathers and mothers are included. Column (2) reports the replication results of column (1) after excluding the missing observation in the variables of number of siblings and books at home. Column (3) presents the results after controlling for the number of siblings and books at home. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: OLS regression results on academic track recommendation

	(1) academic adv.	(2) academic adv.(f)	(3) academic adv.(m)
1st gen.	-0.046***	-0.080***	-0.017
	(0.012)	(0.021)	(0.019)
2nd gen.	-0.030***	-0.065***	-0.007
	(0.011)	(0.020)	(0.016)
female	0.175***		
	(0.006)		
final mark	0.195***	0.182***	0.209***
	(0.006)	(0.009)	(0.007)
invalsi IT	0.002***	0.003***	0.001***
	(0.000)	(0.001)	(0.000)
invalsi math	0.001***	0.000	0.001*
	(0.000)	(0.000)	(0.000)
school dummies	YES	YES	YES
Observations	36057	17801	18256

Notes: Table 4 reports the results obtained from Equation 1. The dependent variable is the probability of being advised by teachers to choose an academic track high school. Column (1) reports results while controlling for the gender, final marks, and mathematics and Italian language INVALSI scores of students, and lower-secondary school heterogeneity. Columns (2) and (3) present the same results for female and male students, respectively. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic	(3) academic(f)	(4) academic(m)
1st gen.	-0.094***	-0.065***	-0.062**	-0.093***
	(0.015)	(0.014)	(0.024)	(0.020)
2nd gen.	-0.055***	-0.036***	-0.045**	-0.039**
	(0.013)	(0.012)	(0.019)	(0.017)
academic adv.		0.575***	0.555***	0.597***
		(0.009)	(0.014)	(0.015)
technical adv.		0.080***	0.087***	0.080***
		(0.007)	(0.015)	(0.010)
invalsi scores	YES	YES	YES	YES
final mark	YES	YES	YES	YES
school dummies	YES	YES	YES	YES
Observations	36057	36057	17801	18256

Notes: Table 5 reports the results obtained from Equation 1. The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, 2nd gen. stands for the second-generation immigrants, and the omitted category is Italian students. Academic adv. is a dummy that takes the value of 1 if the student is advised to choose an academic track school, technical adv. is equal to 1 if the student is advised to choose a technical school track, and the omitted category is the advice to choose a professional school track. Each regression includes control variables on final school marks, INVALSI scores, and school dummies. Column (1) presents the results for our main specification while excluding the missing variables in the dummy variables of school advice. Column (2) presents the results while the school advice is included in the regressions. Columns (3) and (4) present results for female and male students, respectively. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic (F)	(3) academic (M)
1st gen. x academic advise	-0.07**	-0.06	-0.10
	(0.03)	(0.05)	(0.07)
2nd gen. x academic advise	-0.06**	-0.05	-0.07
	(0.02)	(0.04)	(0.04)
1st gen.	-0.05***	-0.04	-0.08***
	(0.02)	(0.03)	(0.02)
2nd gen.	-0.02	-0.02	-0.02
	(0.01)	(0.03)	(0.02)
academic advise	0.58***	0.56***	0.60***
	(0.01)	(0.01)	(0.02)
Observations	36057	17801	18256

Notes: Table 6 reports the results obtained from Equation 1. The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, 2nd gen. stands for the second-generation immigrants, and the omitted category is Italian students. Academic adv. is a dummy that takes the value of 1 if the student is advised to choose an academic track school, and 0 otherwise. Each regression includes control variables on final school marks, INVALSI scores, and school dummies. Columns (2) and (3) present results for female and male students, respectively. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: OLS regression results on the probability of choosing an academic track

	(1) academic	(2) academic	(3) academic	(3A) academic (F)	(3B) academic (M)	(4) academic
1st gen.	-0.084***	-0.073***	-0.087***	-0.071	-0.099***	-0.076***
	(0.027)	(0.027)	(0.027)	(0.048)	(0.034)	(0.027)
2nd gen.	-0.024	-0.018	-0.027	-0.030	-0.026	-0.020
	(0.026)	(0.025)	(0.026)	(0.045)	(0.032)	(0.025)
female	0.231***	0.189***	0.193***			0.174***
	(0.047)	(0.044)	(0.045)			(0.044)
invalsi math	0.004**	0.003*	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
invalsi IT	0.005***	0.003**	0.003**	0.003	0.003	0.002
	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.001)
teacher math	0.037*	0.008				-0.001
	(0.019)	(0.020)				(0.022)
teacher IT		0.119***				0.108***
		(0.020)				(0.022)
final mark			0.102***	0.073	0.075*	0.044
			(0.028)	(0.048)	(0.043)	(0.028)
school dummies	YES	YES	YES	YES	YES	YES
Observations	2916	2916	2916	1314	1602	2916

Notes: Table 7 reports the results obtained from Equation 1 for the matched sample. The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, 2nd gen. stands for the second-generation immigrants, and the omitted category is Italian students. Column (1) shows the results when controlling for gender, mathematics and Italian language INVALSI scores of students, lower-secondary school heterogeneity, and teacher-graded mathematic scores in eighth grade. In column (2), an additional control variable is included, namely the teacher-graded Italian language scores in eighth grade. In column (3), the final score of students is included as a control variable instead of teacher-graded mathematic and Italian scores. In columns (3A) and (3B), the results of column (3) are replicated separately for female and male students, respectively. In column (4), the full set of control variables are included in the regression. Standard errors in parentheses and clustered at the school level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Results from multinomial probit model

Panel A: full sample	Prof	Tech.	Oth Academic	Classic.	Scientific
	(1)	(2)	(3)	(4)	(5)
1st gen.	.092***	.075***	-.066***	-.040***	-.060***
	(.009)	(.013)	(.013)	(.009)	(.012)
2nd gen.	.043***	.055***	-.046***	-.027***	-.025***
	(.008)	(.010)	(.011)	(.006)	(.008)
female	.008**	-.221***	.204***	.030***	-.021***
	(.004)	(.005)	(.005)	(.002)	.004
invalsi math	-.002***	.0001	-.0004**	-.0003***	.003***
	(.0002)	(.0002)	(.0002)	(.0001)	(.0002)
invalsi IT	-.004***	-.001***	.003***	.001***	.001***
	(.0002)	(.0002)	(.0002)	(.0001)	(.0002)
final mark	-.075***	-.047***	.032***	.027***	.062***
	(.005)	(.004)	(.004)	(.002)	(.005)
Observations	46264	46264	46264	46264	46264

Panel B: results by gender	Prof		Tech.		Oth Academic		Classic.		Scientific	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1st gen.	.076***	.105***	.076***	.066***	-.060***	-.065***	-.064***	-.016	-.030*	-.090***
	(.011)	(.013)	(.011)	(.019)	(.019)	(.014)	(.016)	(.010)	(.017)	(.017)
2nd gen.	.028***	.057***	.068***	.033**	-.050***	-.065***	-.044***	-.011*	-.003	-.046***
	(.010)	(.011)	(.012)	(.016)	(.015)	(.014)	(.010)	(.006)	(.012)	(.010)
controls: INVALSI, final mark	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	22633	23631	22633	23631	22633	23631	22633	23631	22633	23631

Notes: Table 8 reports the results obtained from multinomial probit model. All coefficient estimates are marginal effects estimated ex-post based on a probit model. Column (1) presents the results on the probability of choosing professional school tracks, column (2) technical school tracks, column (3) academic tracks other than scientific and classical, column (4) a classical academic school track, and column (5) a scientific academic school track. Panel A presents results for the full sample, and Panel B presents results from gender-specific samples. Standard errors in parentheses and clustered at the school level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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