Research Article

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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' feedback received by the two groups of students are an important driver of the observed differences in educational choices by immigrant and native students. In addition, 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, especially in the case of female students, reflecting a discrimination bias that has not previously been emphasized in the literature. This suggests the role for a new dimension of policy intervention aimed

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at reducing the possibility of teachers' induced discrimination based on implicit stereotypes.

Keywords: immigrant students, high school choice, academic track, discrimination biases, implicit stereotypes

JEL Classification: I21, I24, I26, I28

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, skills 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 7 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 9 percentage points, suggesting that the time spent in Italy can account for part of (but not all) the gap.

We also explore potential 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; Argentin and Triventi 2016; Triventi 2019). 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, together with other mechanisms (see e.g. Argentin and Pavolini 2020).

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 entirely explained by institutional settings or teachers' stereotypes about immigrants.

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 school year 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 school year 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 2019c).

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 one (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, compared with lyceum students, do not enroll in universities. 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 when students are sixteen (in grade ten for most of them). 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 2019a).

While the effect of migration on the labor market has been widely investigated since the end of the 1970 (see, for example, Altonji and Card 1991; Borjas 1985; Borjas and Chiswick 2019; Brücker and Jahn 2011; Card 1990; Docquier, Ozden, and Peri 2014; Dustmann, Hatton, and Preston 2005; Friedberg 2000; Friedberg and Hunt 1995; Grossman 1982), 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 (Brunello and Rocco 2013; Chiswick and DebBurman 2004; Colding, Husted, and Hummelgaard 2009; Cortes 2006; Dustmann, Machin, and Schönberg 2010; Galloway and Gjefsen 2020; Lemmermann and Riphahn 2018; Ruhose and Schwerdt 2016).

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, Stixrud, and Urzua 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, Schnell, and Palmer (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, Farina, and Strozza 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, Pinto, and Savelyev 2013)—namely, the aspirations and motivation in pursuing academic studies (Dalton, Ghosal, and Mani 2016; Genicot and Ray 2017; Mookherjee, Ray, and Napel 2010), 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 (Boone and Van Houtte 2013; Resh 1998).

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 6000 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

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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 (Brunello and Checchi 2007; Guyon and Huillery 2021; Hanushek and Wößmann 2006; Malamud and Pop-Eleches 2011; Van de Werfhorst et al. 2007; Wößmann 2009) finds a negative effect and underlines its role in increasing inequalities, other studies find no effect (Duflo, Dupas, and Kremer 2011; Dustmann, Puhani, and Schönberg 2017).

role compared with other European countries (Boado 2011; Jackson, Jonsson, and Rudolphi 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, Romito, and Cavallo (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, La Ferrara, and Pinotti 2022a). 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 anonymously 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. INVALSI provides both raw scores and scores "corrected for cheating", a well-known problem in Italy (e.g. Bertoni, Brunello, and Rocco 2013; Bertoni et al. 2021). In this paper, to reduce the risk of introducing bias in our analysis, we consistently use scores corrected for cheating. Moreover, in Section 7, we test the robustness of this strategy.

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 analytical sample includes 46,264 students from 6899 schools, 1913 of whom are first-generation immigrants (4.13%), 2449 second-generation immigrants (5.29%), and 41,902 Italian citizens (90.57%). In terms of gender and geographical composition, the sample includes 22,633 (48.92%) female and 23,631 (51.08%) male students. About 25.56% of the students in the

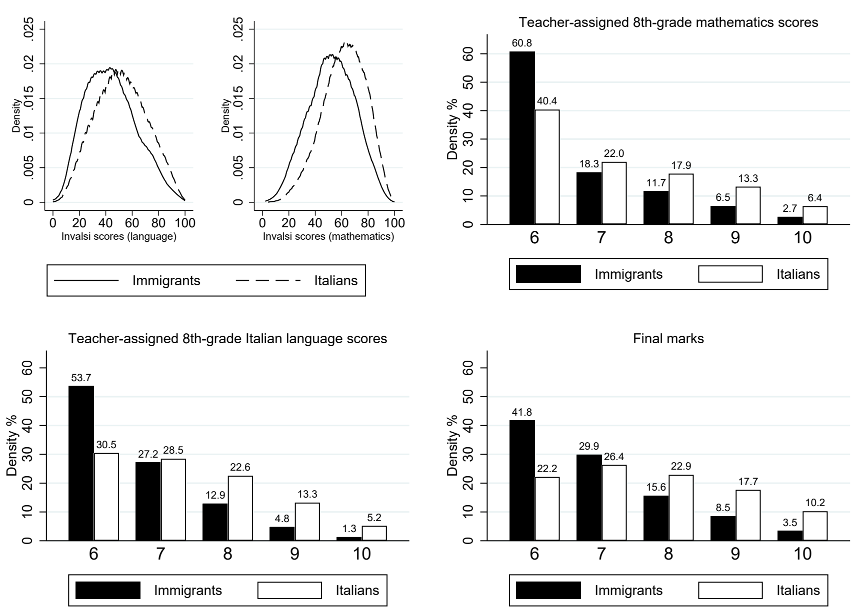

Figure 1: Main characteristics of students.
Figure 1 highlights the main characteristics of the students included in our main working sample, N: 46,264. Teacher-graded scores refer to the scores of eighth-grade students.

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. On average, Italian students outperform immigrants in each category. Figure 2 and Figure 3 plot the distributions of parental occupation and education, respectively, showing that 55% of the immigrant students' fathers work as blue-collar workers or employees, while the corresponding figure is around 41% for the fathers of Italian students. We observe more similar distributions for parental education across immigrants and Italian students. We control for parental background in our econometric specification to understand whether

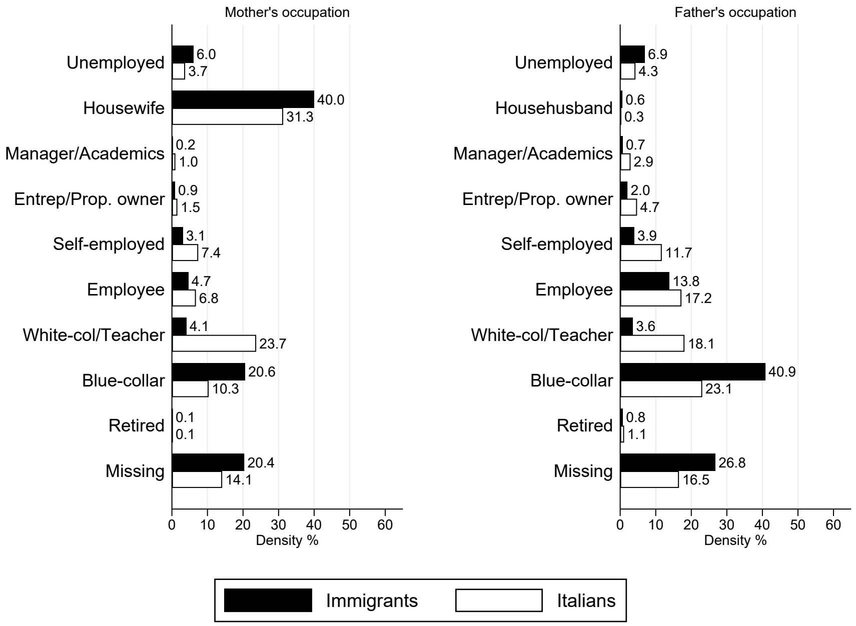

Figure 2: Distribution of parental occupation.
Figure 2 presents the distributions of parental occupation for immigrant and Italian students. 'Entrep/Prop. owner' stands for entrepreneur or property owner, "White-col" stands for white-collar.

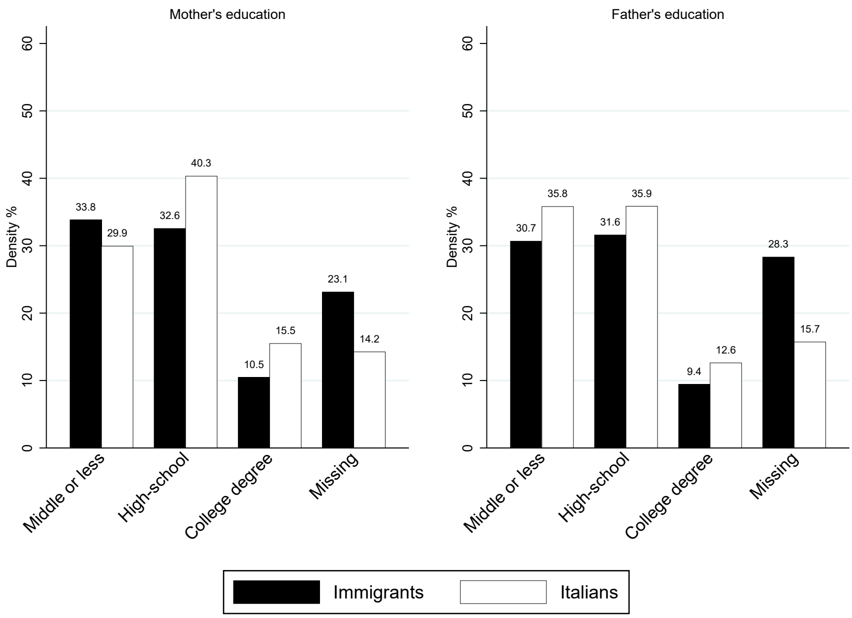

Figure 3: Distribution of parental education.
Figure 3 presents the distributions of parental education for immigrant and Italian students.

the gap in academic track school choices between immigrants and natives can be accounted for by financial constraints.[2]

Throughout the paper, we mainly focus on the determinants of the probability of choosing a lyceum, 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) shows three possible values, namely academic schools, technical schools, and vocational schools. Only 2714 (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 does not alter our findings.[3]

2 In some cases, information about these variables are missing. To work with samples of comparable size, we include the "missing" category when these variables are used in regression analysis.

3 Results based on the data-set that rules out these individuals are available upon request.

In Figure 4, 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 5 shows the probability of choosing academic track schools over the quintiles of INVALSI mathematics (upper-left panel) and language scores (upper-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 INVALSI scores, indicating that the gap is not completely accounted for by the heterogeneity of students' skills. In the bottom panel of Figure 5, we see a similar pattern in terms of the academic track recommendations that students receive from their teachers, with a systematic gap between native and immigrant students. This gap is especially pronounced for students with high scores in mathematics, suggesting the possible existence of a negative bias against immigrant students.

Indeed, one of the underlying mechanisms that can account for the gap in school choices, or in teacher's recommendations, is teachers' discrimination towards immigrants. As documented by Alesina et al. (2018) and Carlana, La Ferrara, and Pinotti (2022b), teachers can have an explicit or implicit bias against

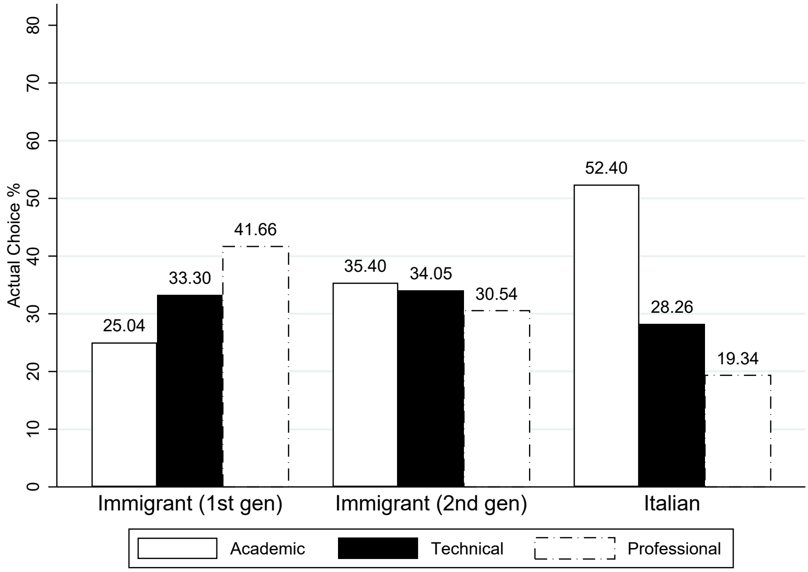

Figure 4: School choices.
Figure 4 plots the average probability of choosing different high school tracks (academic, technical, professional) by first- (1st gen), second- (2nd gen) generation immigrants, and Italians. N: 46,264.

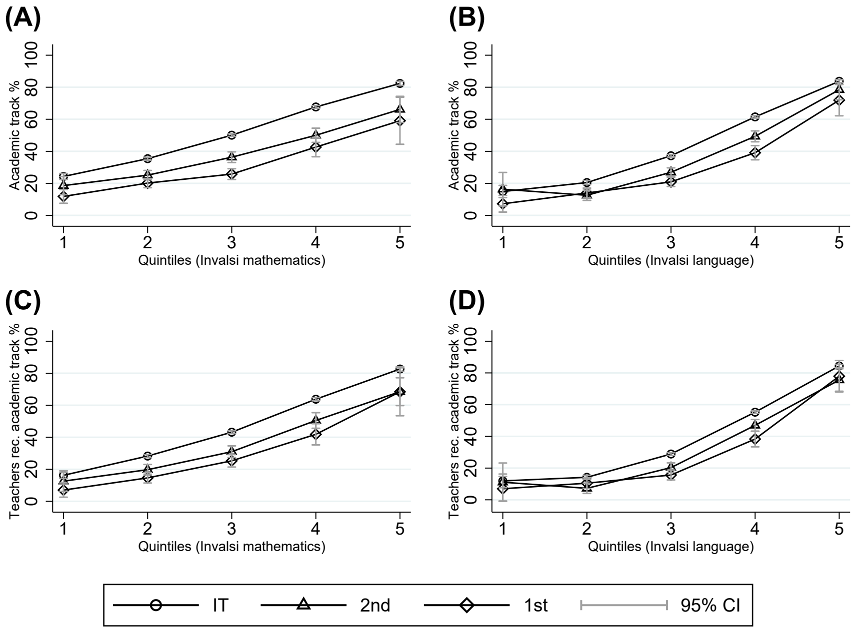

Figure 5: Academic school choice and received advice by INVALSI scores.
Figure 5 highlights the share of students who choose an academic track high school by INVALSI scores (panel (A) and (B)) and the share of students who received an academic high school track advice by their teachers over INVALSI scores (panel (C) and (D)) for Italian, first- and second-generation immigrant students.

immigrant students. In Figure 6, 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 Italian students, 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.

The right panel of Figure 7 shows the average probabilities of receiving an academic school advice over students' final marks. The observed gap between native and immigrant students shrinks when focusing on teachers' assigned final marks (which are based on teachers' subjective assessments). This is not surprising, given that marks evaluate much more than cognitive skills, including teachers'

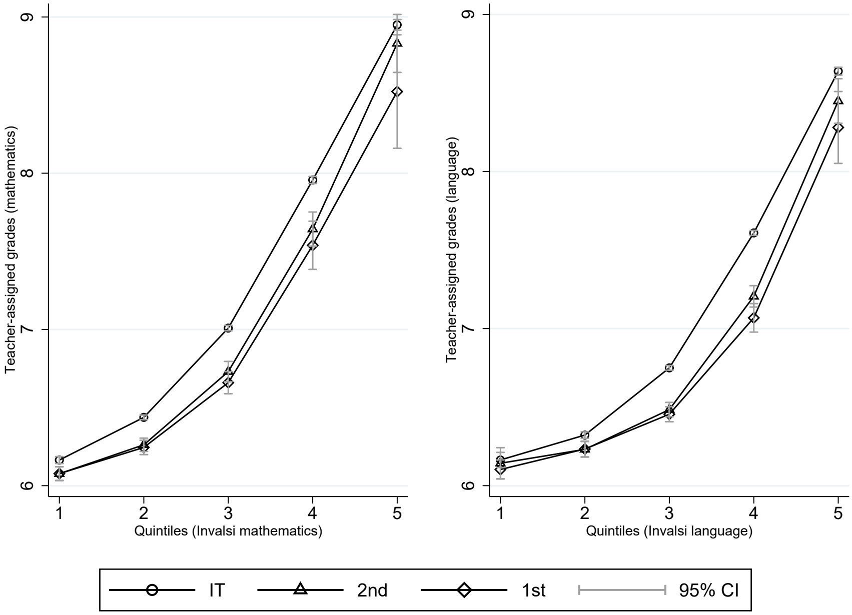

Figure 6: Teacher-assigned grades by INVALSI scores.
Figure 6 plots the average teacher-assigned mathematics (left-figure) and language (right-figure) scores by the quintiles of INVALSI scores for first- (1st) and second- (2nd) generation immigrant, and Italian (IT) students. N: 46,264. Teacher-assigned scores refer to the scores of students in eighth-grade.

biases in the assessment of immigrant students. Moreover, INVALSI scores are not yet available when teachers give their advice.

Figure 8 presents the distributions of academic track school choices and academic track school recommendations over parental education for foreign and Italian students. Again, students of foreign origin—especially first generation immigrants—are systematically less likely to choose an academic track school and less likely to be recommended for these schools, particularly when their parents hold a post-secondary school diploma.

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

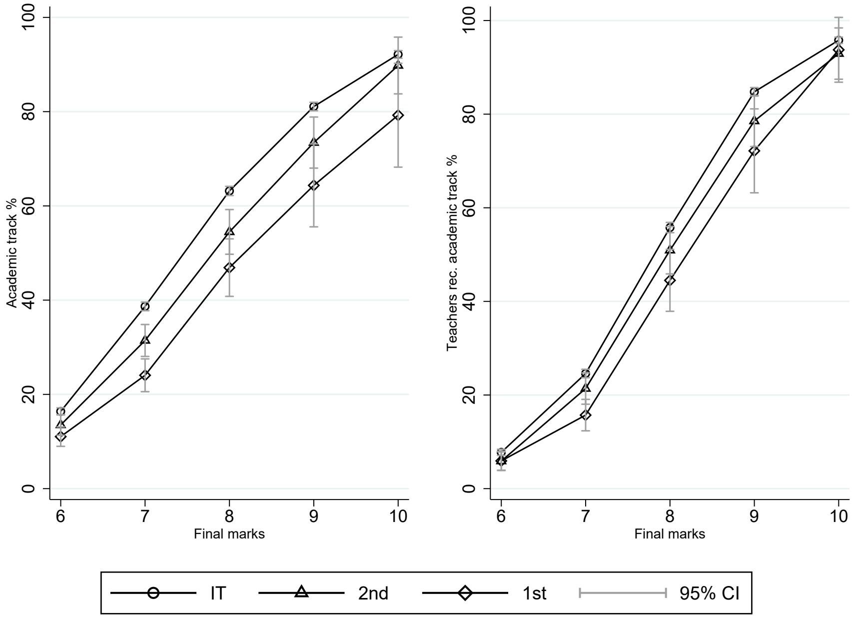

Figure 7: School choice versus teacher recommendation by final marks.
Figure 9 plots the academic track high school choices and teachers' recommendation for academic track high schools by students' final marks at the end of the 8th grade for first- (1st) and second- (2nd) generation immigrant, and Italian (IT) students.

of "academic track high schools" (which we define as any of the nine possible lyceum types) for Italian and foreign students.[4]

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:

$$Y_i = \alpha + \beta_1 * \text{first}_i + \beta_2 * \text{second}_i + X_i\Gamma + \sigma_s + \epsilon_i;$$

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

4 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).

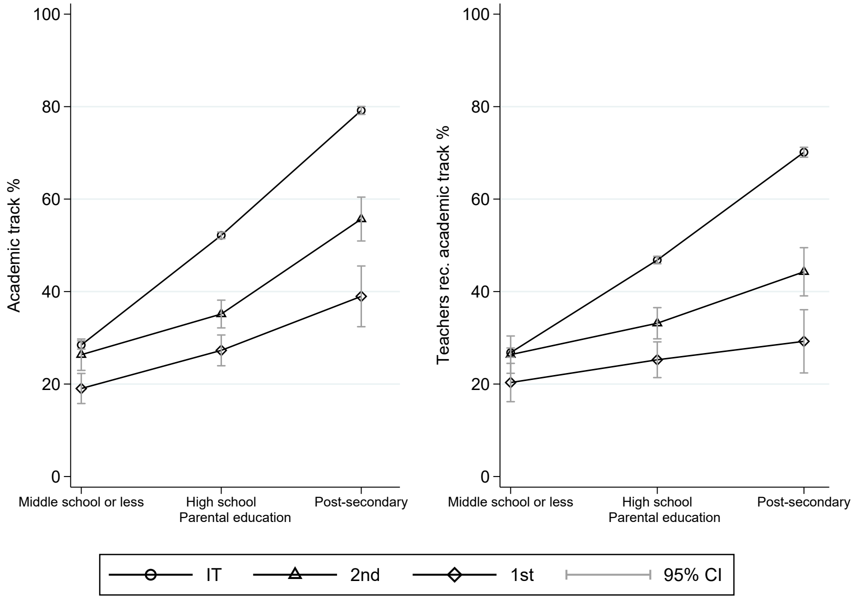

Figure 8: Academic school choice and received advice by parental education.
Figure 8 highlights the share of students who choose an academic track high school (left panel) and the share of students who received an academic high school track advice (right panel) by their parental education for Italian, first- and second-generation immigrant students.

a vector of control variables including gender, a set of performance indicators measured in sy 2015/16 (standardized language and mathematics scores, final lower-secondary school marks), parental education, parental occupation, number of books at home, number of siblings, and students' self-assessments about their skills in mathematics; σ_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. In column (1) of Table 1, we only control for students' gender and standardized INVALSI test scores. Our results indicate first- and second-generation immigrant students are (respectively) 13.3

Table 1: Results on school choice.

	(1) Academic	(2) Academic	(3) Academic	(3A) Academic (F)	(3B) Academic (M)
1st gen.	−0.133***	−0.106***	−0.086***	−0.100***	−0.088***
	(0.010)	(0.010)	(0.012)	(0.022)	(0.016)
2nd gen.	−0.095***	−0.061***	−0.045***	−0.063***	−0.041***
	(0.010)	(0.009)	(0.011)	(0.018)	(0.016)
Female	0.212***	0.151***	0.152***		
	(0.004)	(0.004)	(0.005)		
INVALSI mathematics	0.004***	0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INVALSI language	0.008***	0.003***	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Final marks. omitted: 6≤					
7		0.159***	0.159***	0.203***	0.133***
		(0.007)	(0.007)	(0.013)	(0.010)
8		0.365***	0.364***	0.382***	0.358***
		(0.008)	(0.009)	(0.015)	(0.013)
9		0.512***	0.510***	0.506***	0.539***
		(0.009)	(0.010)	(0.017)	(0.016)
10		0.595***	0.607***	0.579***	0.678***
		(0.011)	(0.012)	(0.020)	(0.019)
School FE	No	No	Yes [6899]	Yes [6028]	Yes [6102]
Observations	46,264	46,264	46,264	22,633	23,631
R^2	0.222	0.299	0.456	0.489	0.520

Table 1 reports the results on high school choices. The dependent variable is the probability of choosing academic track schools. 1st gen. and 2nd gen. stand for the first and second generation immigrants, respectively. Columns (3A) and (3B) show the results of column (3) for female and male students, respectively. The number of schools are reported in the line of School FE when the regressions include school fixed-effects. Standard errors are in parentheses and clustered at school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

and 9.5 percentage points (p.p.) less likely to enroll in academic track high schools compared to native students. As already noted, the INVALSI scores are a good proxy for students' cognitive skills as these test 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.

In the following columns of Table 1 we gradually include additional control variables to our specifications to better understand the mechanisms behind the choice of academic track high schools. In particular, we introduce school dummies and further measures of students' performance, namely final marks assigned in the national exam for the lower-secondary education license. Controlling for schools' heterogeneity allows to take into account students' heterogeneity in terms of the neighborhood they live in. In fact, in Italy students are very likely to attend the lower-secondary school located in their neighborhood. Moreover, the final marks, as opposite to INVALSI scores, allow teachers to consider the whole school experience of their students, beyond their cognitive results. The inclusion of these new control variables into the model (see columns (2) and (3) of Table 1) reduces the magnitude of the estimated coefficients. Nonetheless, the probability of first- and second-generation immigrants choosing an academic track school is still 8.6 p.p. and 4.5 p.p. lower compared with Italian students, respectively. Finally, by focusing separately on female and male students in Columns (3A) and (3B) of Table 1, respectively, we observe a significant gap in the probability of choosing an academic track high school by immigrant students of both genders with respect to their native counterparts. This gap is slightly larger for female immigrant students (vs. female Italian students) compared with male students.

In Table 2, we report results from a model specification in which we introduce further control variables for students' background characteristics, such as parental occupation and education. We add to the specification in column (3) of Table 1—which is our preferred specification—information on parental occupation and education. Having highly educated parents is strongly and positively correlated with the choice of academic track schools. Parental occupation also plays an important role in school choices. Nevertheless, although the magnitude of our new coefficient is smaller compared to Table 1,[5] a significant gap of 7 p.p. remains in academic track high school choices between native and first-generation immigrants; the gap shrinks to 2.5 p.p. for second-generation students (see Table 2, column (1)).

When controlling for gender, we find that—after including parental background in the model—the gap in school choice for second-generation immigrant male students shrinks and becomes insignificant (see columns (2) and (3) of Table 2).

Table 2 also reports Oster (2019)'s δ. This test signals the importance of the unobservable factors not considered by our model. To compute this test statistic, one needs "uncontrolled" and "controlled" specifications of the estimation model; in fact, the computation of δ is essentially based on the ratio of

5 Recall that students' parental background is strongly correlated with their status of immigrant.

Table 2: Results on school choice.

	(1)		(2)		(3)	
	Academic		Academic (F)		Academic (M)	
1st gen.	−0.068***	(0.012)	−0.079***	(0.022)	−0.071***	(0.017)
2nd gen.	−0.024**	(0.011)	−0.040**	(0.018)	−0.016	(0.016)
Female	0.162***	(0.005)				
INVALSI mathematics	−0.000*	(0.000)	−0.000	(0.000)	−0.000	(0.000)
INVALSI language	0.002***	(0.000)	0.002***	(0.000)	0.002***	(0.000)
Final marks. omitted: 6≤						
7	0.163***	(0.007)	0.208***	(0.013)	0.132***	(0.009)
8	0.369***	(0.007)	0.392***	(0.013)	0.352***	(0.011)
9	0.513***	(0.008)	0.517***	(0.013)	0.526***	(0.013)
10	0.604***	(0.008)	0.587***	(0.013)	0.653***	(0.014)
Father's occupation. omitted: unemployed						
Househusband	0.002	(0.045)	0.004	(0.073)	−0.017	(0.068)
Manager/academics	0.077***	(0.018)	0.052*	(0.029)	0.097***	(0.027)
Entrepreneur/property owner	0.031**	(0.015)	0.030	(0.027)	0.028	(0.024)
Self-employed	0.057***	(0.014)	0.071***	(0.023)	0.060***	(0.021)
Employee	0.019	(0.012)	0.032	(0.021)	0.022	(0.019)
White-collar/Teacher	0.037***	(0.013)	0.043*	(0.022)	0.045**	(0.020)
Blue-collar	−0.002	(0.012)	0.012	(0.021)	−0.008	(0.018)
Retired	0.040*	(0.024)	0.074*	(0.042)	0.008	(0.037)
Missing	0.014	(0.014)	0.028	(0.024)	0.005	(0.021)
Mother's occupation. omitted: unemployed						
Housewife	−0.003	(0.012)	0.006	(0.021)	−0.008	(0.019)
Manager/academics	0.037	(0.023)	0.058	(0.039)	−0.006	(0.037)
Entrepreneur/property owner	0.051**	(0.022)	0.024	(0.038)	0.120***	(0.036)
Self-employed	0.044***	(0.015)	0.046*	(0.024)	0.047**	(0.024)
Employee	0.033**	(0.015)	0.048**	(0.024)	0.024	(0.023)
White-collar/teacher	0.042***	(0.013)	0.055**	(0.021)	0.027	(0.020)
Blue-collar	−0.014	(0.013)	0.001	(0.023)	−0.023	(0.020)
Retired	0.013	(0.059)	−0.131	(0.114)	0.106	(0.079)
Missing	0.010	(0.015)	0.030	(0.026)	−0.003	(0.024)
Father's education. omitted: middle or less						
High school	0.058***	(0.006)	0.075***	(0.011)	0.042***	(0.010)
Post-secondary degree	0.105***	(0.009)	0.089***	(0.015)	0.118***	(0.016)
Missing	0.048***	(0.011)	0.046**	(0.020)	0.047***	(0.017)
Mother's education. omitted: middle or less						
High school	0.055***	(0.006)	0.068***	(0.011)	0.044***	(0.010)
Post-secondary degree	0.112***	(0.009)	0.107***	(0.015)	0.118***	(0.016)
Missing	0.040***	(0.012)	0.030	(0.021)	0.048***	(0.019)

Table 2: (continued)

	(1)	(2)	(3)
	Academic	**Academic (F)**	**Academic (M)**
School FE	Yes [6899]	Yes [6028]	Yes [6102]
Observations	46,264	22,633	23,631
R^2	0.474	0.506	0.539
δ_{1st}; δ_{2nd}	2.32; 1.17	2.19; 1.56	2.54; -

The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, and 2nd gen. stands for the second-generation immigrants. Column (2) reports the results for female students, column (3) shows them for male students. δ_{1st} and δ_{2nd} report the Oster (2019)'s δ for the coefficients of 1st gen. and 2nd gen. immigrants, respectively. Standard errors in parentheses and clustered at the school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

the changes in R^2 and in the magnitude of coefficients moving from one specification to the other.[6] Following Bryan, Roberts, and Sechel 2019, we include only school fixed effects and final mark dummies as control variables in our "uncontrolled" specification.[7] We then add gender, INVALSI scores, and parental background to define our "controlled" specification of the model and compute Oster (2019)'s δ.

The computed δ_{1st} and δ_{2nd} indicate that the variables that are not controlled for by our model should be 2.32 times more important than the ones already included in our specification to make the estimate of the first-generation immigrants coefficient not statistically significant.[8] Therefore, considering that our model controls for the key characteristics of students, the presence of severe omitted variable bias is very unlikely.

In Table 3, we also control for number of siblings, books at home (a proxy of families' cultural level), and students' self-assessed confidence in mathematics. We still find a 5 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

6 See Oster (2019) for a comprehensive discussion on the computation and interpretation of δ.

7 This procedure requires to run separate regressions to residualize the covariates from school fixed-effects and final mark dummies. This does not change the final coefficient estimates of interest on the gap between the school choices of immigrant and native students.

8 Furthermore, they should be be 1.17 times more important than the variables included in the model to make the estimate of the second-generation immigrants coefficient not statistically significant.

characteristics—in addition to students' skills and parental background—almost entirely explain the differences in school choices across students.

6.1 High 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. To investigate this factor, we consider a dependent variable that takes the value of 1 if student i receives an academic track high school advice in sy 2016/17, and 0 otherwise.

Table 4 reports the estimated coefficients of this new model. 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), first- (second-) generation immigrants are about 7.5 p.p. (4 p.p.) less likely to be advised to choose an academic track high school.

In columns (2) and (3), we focus separately on female and male students, respectively. Interestingly, the gap in recommendations seem to be driven mainly by female students. In fact, once we include school fixed-effects into our model, the gap in teachers' recommendations for males becomes insignificant. Recent evidence shows that in Italy immigrants are less likely to receive recommendations to attend academic track high schools due to teachers' implicit stereotypes (Carlana, La Ferrara, and Pinotti 2022b). We reveal that the gap is more pronounced for the female students. As Carlana (2019) documents, in Italy school teachers show implicit gender stereotypes adversely affecting female pupils. Accordingly, teachers can shape their high school advice around some gender norms. For instance, they could think that male students will need entering the job market as soon as possible to financially support their families; consequently, the gap for males could be controlled for school fixed-effects and parental background. On the other hand, for female students the implicit nationality bias could be the dominant factor, so that the gap between immigrant and native students could remain after controlling for school fixed-effects and parental background.

Table 5 also controls for the family background of students. The gap for female students remains strongly significant for both first and second generation immigrants. These findings reveal that parental occupation has a somewhat weaker impact on teachers' recommendations than it has on actual school choices. However, parental education is still a very good predictor of the advice received by students. In fact, the estimated δ is 3.60 for first-generation female immigrants

Table 3: Results on school choice.

	(1) Academic track	(2) Academic track (F)	(3) Academic track (M)
1st gen.	−0.050***	−0.061***	−0.056***
	(0.012)	(0.022)	(0.017)
2nd gen.	−0.012	−0.031*	−0.004
	(0.011)	(0.018)	(0.016)
Female	0.162***		
	(0.005)		
	(0.012)	(0.021)	(0.019)
Do you consider yourself good at mathematics? omitted: Yes			
No	0.005	0.005	0.016
	(0.006)	(0.010)	(0.010)
Missing	0.018	0.022	0.038*
	(0.012)	(0.019)	(0.020)
How many books do you have at home? omitted: None			
A small shelf	0.018**	0.032**	−0.003
	(0.008)	(0.015)	(0.012)
A shelf	0.052***	0.049***	0.043***
	(0.008)	(0.015)	(0.012)
Two shelves	0.079***	0.075***	0.074***
	(0.010)	(0.017)	(0.015)
Three or more shelves	0.092***	0.074***	0.095***
	(0.010)	(0.018)	(0.015)
Missing	0.003	0.018	−0.030
	(0.019)	(0.039)	(0.025)
How many siblings do you have? omitted: None			
1	−0.010	−0.005	−0.023**
	(0.007)	(0.011)	(0.011)
2	−0.019**	−0.025*	−0.024*
	(0.008)	(0.014)	(0.013)
3	−0.017	−0.034	−0.014
	(0.013)	(0.021)	(0.021)
4	−0.000	0.041	−0.037
	(0.017)	(0.029)	(0.025)
Missing	−0.032	−0.058	−0.022
	(0.021)	(0.042)	(0.030)
School FE	Yes [6899]	Yes [6028]	Yes [6102]
Parental background	Yes	Yes	Yes
INVALSI scores	Yes	Yes	Yes

Table 3: (continued)

	(1) Academic track	(2) Academic track (F)	(3) Academic track (M)
Final marks	Yes	Yes	Yes
Observations	46,264	22,633	23,631
R^2	0.477	0.508	0.543

The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, and 2nd gen. stands for the second-generation immigrants. Column (2) reports the results for female students, column (3) shows them for male students. Standard errors are in parenthesis and clustered at school level. School FE line reports the number of schools in parenthesis.

and 3.30 for second-generation immigrants, indicating that the unobservable variables in our model should be three times more important than the observable ones to make our estimates not statistically significant. Finally, when we include additional controls for students' households characteristics (in Table 6), the gap for female student remains negative and statistically significant.

Furthermore, when considering the correlation between teachers' recommendations and the actual school choices of students, Figure 9 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, on top of teachers' track recommendation conveying a possible bias, other factors affect students' decision to choose an academic track. In fact, not all biases and stereotypes immigrant students are exposed to can be captured by teachers' track recommendations if systemic discrimination towards immigrants is widespread (Bohren, Hull, and Imas 2022).

Table 7 shows the results of regressing the probability of choosing an academic track high school on teachers' advice.[9] Column (1) describes results of a model that does not control for parental background, showing that students who

9 As information on these recommendations is not available for every student, we estimate the results on high school choices using a sample that excludes missing observations. The estimated gap in the academic track high school choices of immigrant and native students is perfectly in line with what we reported previously in the paper, indicating that missing cases do not drive our findings. These results are available upon request.

Table 4: Results on teachers' recommendations.

	(1) Academic	(1A) Academic (F)	(1B) Academic (M)	(2) Academic	(2A) Academic (F)	(2B) Academic (M)
1st gen.	−0.076***	−0.103***	−0.045***	−0.042***	−0.067***	−0.015
	(0.010)	(0.016)	(0.013)	(0.012)	(0.021)	(0.019)
2nd gen.	−0.041***	−0.069***	−0.015	−0.028**	−0.060***	−0.012
	(0.010)	(0.015)	(0.012)	(0.011)	(0.020)	(0.016)
Female	0.165***			0.166***		
	(0.005)			(0.005)		
Final marks. omitted: ≤6						
7	0.124***	0.202***	0.070***	0.133***	0.221***	0.084***
	(0.007)	(0.011)	(0.007)	(0.007)	(0.014)	(0.009)
8	0.404***	0.485***	0.333***	0.411***	0.495***	0.350***
	(0.009)	(0.013)	(0.011)	(0.009)	(0.016)	(0.014)
9	0.669***	0.701***	0.661***	0.674***	0.704***	0.683***
	(0.010)	(0.014)	(0.013)	(0.010)	(0.017)	(0.017)
10	0.762***	0.764***	0.811***	0.769***	0.766***	0.823***
	(0.011)	(0.015)	(0.014)	(0.012)	(0.020)	(0.019)
INVALSI mathematics	0.000	−0.000	0.000**	0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INVALSI language	0.002***	0.002***	0.002***	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
School FE	No	No	No	Yes [5552]	Yes [4848]	Yes [4852]
Observations	36,057	17,801	18,256	36,057	17,801	18,256
R^2	0.415	0.349	0.398	0.555	0.588	0.604

Table 4 reports the results on the probability of receiving recommendation to choose academic track high schools. 1st gen. and 2nd gen. stand for the first and second generation immigrants, respectively. Columns (1A) and (1B) show the results of column (1) for female and male students, respectively. Columns (2A) and (2B) show the results of column (2) for female and male students, respectively. The number of schools are reported in the line of School FE when the regressions include school fixed-effects. Standard errors are in parentheses and clustered at school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

are advised to choose an academic track by their teachers are 57 p.p. more likely to choose that kind of school compared to students who are advised to choose a vocational school track. Columns (1A) and (1B), decomposing the sample by gender, show that the importance of teachers' recommendations is similar for female and male students. In column (2), we control for parental background and find no important changes in our results.

Table 5: Results on teachers' recommendations.

	(1)		(2)		(3)	
	Academic		Academic (F)		Academic (M)	
1st gen.	−0.03***	(0.01)	−0.06***	(0.02)	−0.01	(0.02)
2nd gen.	−0.01	(0.01)	−0.04**	(0.02)	0.00	(0.02)
Female	0.17***	(0.01)				
INVALSI mathematics	0.00	(0.00)	−0.00	(0.00)	0.00	(0.00)
INVALSI language	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
Final marks. omitted: ≤6						
7	0.16***	(0.01)	0.23***	(0.01)	0.09***	(0.01)
8	0.45***	(0.01)	0.51***	(0.01)	0.36***	(0.01)
9	0.73***	(0.01)	0.72***	(0.01)	0.69***	(0.01)
10	0.83***	(0.01)	0.79***	(0.01)	0.82***	(0.01)
Father's occupation. omitted: unemployed						
Househusband	−0.02	(0.05)	0.04	(0.08)	−0.13**	(0.06)
Manager/academics	0.03	(0.02)	0.03	(0.03)	0.02	(0.03)
Entrepreneur/property owner	−0.01	(0.02)	−0.02	(0.03)	−0.03	(0.03)
Self-employed	0.01	(0.01)	0.03	(0.03)	−0.00	(0.02)
Employee	−0.01	(0.01)	−0.01	(0.02)	−0.03	(0.02)
White-collar/teacher	0.01	(0.01)	0.02	(0.02)	−0.01	(0.02)
Blue-collar	−0.02*	(0.01)	−0.02	(0.02)	−0.04**	(0.02)
Retired	0.01	(0.03)	0.00	(0.04)	0.01	(0.04)
Missing	−0.03	(0.02)	−0.02	(0.03)	−0.03	(0.02)
Mother's occupation. omitted: unemployed						
Housewife	−0.00	(0.01)	0.01	(0.02)	−0.02	(0.02)
Manager/academics	0.03	(0.03)	0.07*	(0.04)	0.01	(0.05)
Entrepreneur/property owner	0.00	(0.02)	−0.00	(0.04)	0.02	(0.04)
Self-employed	0.03*	(0.02)	0.03	(0.03)	0.01	(0.02)
Employee	0.03*	(0.02)	0.05*	(0.03)	0.01	(0.02)
White-collar/teacher	0.02	(0.01)	0.03	(0.02)	−0.00	(0.02)
Blue-collar	0.00	(0.01)	0.00	(0.03)	−0.01	(0.02)
Retired	0.02	(0.06)	0.01	(0.13)	−0.06	(0.08)
Missing	0.02	(0.02)	0.05*	(0.03)	−0.00	(0.02)
Father's education. omitted: middle school or less						
High school	0.03***	(0.01)	0.04***	(0.01)	0.01	(0.01)
Post-secondary degree	0.06***	(0.01)	0.04***	(0.02)	0.06***	(0.02)
Missing	0.03***	(0.01)	0.05**	(0.02)	0.03	(0.02)
Mother's education. omitted: middle school or less						
High school	0.05***	(0.01)	0.06***	(0.01)	0.04***	(0.01)
Post-secondary degree	0.08***	(0.01)	0.08***	(0.02)	0.09***	(0.02)
Missing	0.04***	(0.01)	0.04	(0.02)	0.04**	(0.02)

Table 5: (continued)

	(1)	(2)	(3)
	Academic	**Academic (F)**	**Academic (M)**
School FE	Yes [5552]	Yes [4848]	Yes [4852]
Observations	36,057	17,801	18,256
R^2	0.562	0.595	0.611
δ_{1st}; δ_{2nd}	5.88; -	3.60; 3.30	-; -

Table 5 reports results on the probability of receiving recommendation to choose academic track high schools. Columns (1), (2), and (3) show the results for the full sample, for female, and male students, respectively. In the line of School FE, the number of schools are in parentheses. δ_{1st} and δ_{2nd} report the Oster (2019)'s δ for the coefficients of 1st gen. and 2nd gen. immigrants, respectively. Standard errors are clustered at school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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 the status of immigrant. Table 8 shows that the probability of choosing academic track high schools when advised to do so is about 6–7 p.p. smaller for both first- and second-generation immigrants compared with their Italian counterparts who are also advised to choose those schools. We see not statistically significant results by gender in columns (1A) and (1B). However, when we estimate the model with only general immigrant status (instead of specifying the first- and second-generations), the results are statistically significant by gender as well (columns (2A) and (2B)).

Hence, even when immigrant students get an advice to choose a lyceum, because of their particularly good performance and/or because of an unbiased advice, other factors may contribute to explain their educational disadvantages. There is more to understand in immigrant students' choice beyond teachers stereotypes for successful pathways (Santagati 2019).[10]

10 We consider teachers' recommendation to immigrant students to choose an academic track high school as a signal of overcoming the discrimination bias. Nonetheless, stereotypes from the peers and parents may still impact on students' self-esteem, representing a further discrimination channel. Hence, despite being advised to choose academic track high schools, immigrant students may still prefer avoiding them.

Table 6: Results on teachers' recommendations.

	(1) Academic	(2) Academic (F)	(3) Academic (M)
1st gen.	−0.021*	−0.044**	−0.002
	(0.012)	(0.022)	(0.019)
2nd gen.	−0.006	−0.038*	0.009
	(0.011)	(0.020)	(0.016)
Female	0.172***		
	(0.005)		
Do you consider yourself good at mathematics? omitted: Yes			
No	−0.002	0.005	0.005
	(0.006)	(0.010)	(0.010)
Missing	−0.007	−0.001	0.005
	(0.013)	(0.021)	(0.021)
How many books do you have at your home? omitted: None			
A small shelf	0.021**	0.035**	0.000
	(0.009)	(0.016)	(0.013)
A shelf	0.041***	0.047***	0.026**
	(0.009)	(0.016)	(0.013)
Two shelves	0.057***	0.067***	0.030*
	(0.010)	(0.018)	(0.016)
Three or more shelves	0.066***	0.072***	0.060***
	(0.011)	(0.019)	(0.017)
Missing	0.017	−0.017	0.027
How many siblings do you have? omitted: None			
	(0.019)	(0.041)	(0.026)
1	0.000	0.009	−0.016
	(0.007)	(0.012)	(0.012)
2	−0.018**	−0.001	−0.031**
	(0.009)	(0.015)	(0.014)
3	−0.019	0.001	−0.039*
	(0.014)	(0.023)	(0.021)
4	−0.001	0.048	−0.060**
	(0.017)	(0.031)	(0.025)
Missing	−0.003	0.038	−0.037
	(0.022)	(0.045)	(0.032)
School FE	Yes [5552]	Yes [4848]	Yes [4852]
Parental background	Yes	Yes	Yes

Table 6: (continued)

	(1) Academic	(2) Academic (F)	(3) Academic (M)
INVALSI scores	Yes	Yes	Yes
Final marks	Yes	Yes	Yes
Observations	36,057	17,801	18,256
R^2	0.563	0.597	0.612

The dependent variable is the probability of choosing receiving advise from teachers to choose an academic track high school. 1st gen. stands for the first-generation immigrants, and 2nd gen. stands for the second-generation immigrants. Column (2) reports the results for female students, column (3) shows them for male students. Standard errors are in parenthesis and clustered at school level. School FE line reports the number of schools in parenthesis.

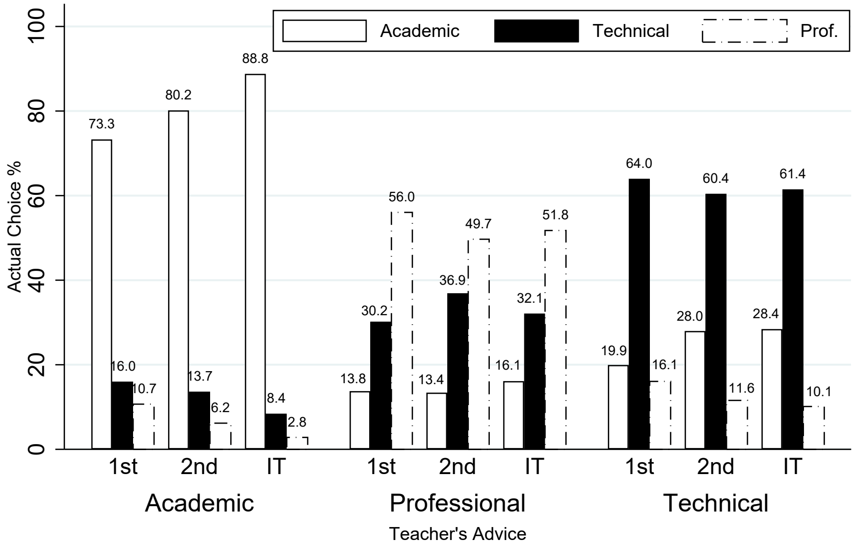

Figure 9: School choice versus teacher recommendation.
Figure 9 plots the students' high school choices conditional on teachers' recommendation for first- (1st), second- (2nd) generation immigrant, and Italian students (IT). N: 36,057.

7 Robustness Checks

In order to check the robustness of our findings we modify our baseline setup by: (1) focusing only on schools based in Northern Italy; (2) replicating our main analysis using a matched sample; (3) relying on an outcome variable that provides more specific information on students' school choices estimating a multinomial probit model.

Table 7: Results on school choice.

	(1) Academic	(1A) Academic (F)	(1B) Academic (M)	(2) Academic	(2A) Academic (F)	(2B) Academic (M)
1st gen.	-0.065^{***}	-0.061^{**}	-0.093^{***}	-0.051^{***}	-0.048^{*}	-0.079^{***}
	(0.014)	(0.024)	(0.020)	(0.014)	(0.025)	(0.020)
2nd gen.	-0.036^{***}	-0.045^{**}	-0.038^{**}	-0.020^{*}	-0.031	-0.016
	(0.012)	(0.019)	(0.017)	(0.012)	(0.019)	(0.017)
Female	0.084^{***}			0.093^{***}		
	(0.005)			(0.005)		
Teachers' recommendations. omitted: Professional track						
Academic track	0.568^{***}	0.552^{***}	0.589^{***}	0.543^{***}	0.531^{***}	0.556^{***}
	(0.010)	(0.015)	(0.015)	(0.010)	(0.016)	(0.015)
Technical track	0.070^{***}	0.081^{***}	0.070^{***}	0.059^{***}	0.073^{***}	0.056^{***}
	(0.008)	(0.016)	(0.011)	(0.008)	(0.016)	(0.011)
School FE	Yes [5552]	Yes [4848]	Yes [4852]	Yes [5552]	Yes [4848]	Yes [4852]
Parental background	No	No	No	Yes	Yes	Yes
INVALSI scores	Yes	Yes	Yes	Yes	Yes	Yes
Final marks	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,057	17,801	18,256	36,057	17,801	18,256
R^2	0.561	0.583	0.616	0.570	0.590	0.626

Table 7 reports the results on the probability of choosing an academic track high school. 1st gen. stands for first-generation immigrants, 2nd gen. stands for second-generation immigrants, and the omitted category is Italian students. Academic track is a dummy that takes the value of 1 if the student is advised to choose an academic track high school, Technical track 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) shows the results when the parental background is not controlled for, column (2) shows the results once the parental background is controlled. Columns (1A) and (1B) report the results of column (1) for female and male students, respectively. Columns (2A) and (2B) report the results of column (2) for female and male students, respectively. Parental background includes mothers' and fathers' education and occupation. Standard errors in parentheses and clustered at the school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

7.1 Geographic Sub-sample

While INVALSI scores are very good proxies for students' skills, one issue with them is misreporting by teachers who might inflate students' grades (Angrist, Battistin, and Vuri 2017). To overcome this problem, as we mentioned earlier in the paper, INVALSI provides both "raw" scores and scores "corrected for cheating", that we always used in our analysis. Figure 10 justifies our choice showing the "raw" and "corrected" test scores for mathematics and language.

Table 8: Results on school choice.

	(1) Academic	(1A) Academic (F)	(1B) Academic (M)	(2) Academic	(2A) Academic (F)	(2B) Academic (M)
1st gen. ×academic track	−0.068**	−0.062	−0.105			
	(0.032)	(0.048)	(0.067)			
2nd gen. ×academic track	−0.059**	−0.055	−0.066			
	(0.023)	(0.037)	(0.043)			
1st gen.	−0.047***	−0.039	−0.077***			
	(0.015)	(0.030)	(0.020)			
2nd gen.	−0.016	−0.019	−0.024			
	(0.013)	(0.026)	(0.019)			
Immigrants × academic track				−0.059***	−0.056*	−0.072*
				(0.019)	(0.030)	(0.037)
Immigrants				−0.030***	−0.028	−0.046***
				(0.011)	(0.021)	(0.015)
Teachers' recommendations. omitted: Professional track						
Academic	0.574***	0.558***	0.595***	0.574***	0.558***	0.594***
track	(0.010)	(0.016)	(0.015)	(0.010)	(0.016)	(0.015)
Technical	0.071***	0.083***	0.071***	0.071***	0.083***	0.071***
track	(0.008)	(0.016)	(0.011)	(0.008)	(0.016)	(0.011)
School FE	Yes [5552]	Yes [4848]	Yes [4852]	Yes [5552]	Yes [4848]	Yes [4852]
INVALSI scores	Yes	Yes	Yes	Yes	Yes	Yes
Final marks	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,057	17,801	18,256	36,057	17,801	18,256
R^2	0.561	0.583	0.616	0.561	0.583	0.616

Table 8 reports the results on the probability of choosing an academic track high school. 1st gen. stands for first-generation immigrants, 2nd gen. stands for second-generation immigrants, and the omitted category is Italian students. Academic track is a dummy that takes the value of 1 if the student is advised to choose an academic track high school, and 0 otherwise. Each regression includes control variables on final school marks, INVALSI scores, and school dummies. Columns (1A) and (1B) present results of column (1) for female and male students, respectively. Columns (2), (2A), and (2B) show the results for the full sample, females, and males, respectively when the first and second generation immigrants are considered together under the label of Immigrants. Standard errors in parentheses and clustered at the school level. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

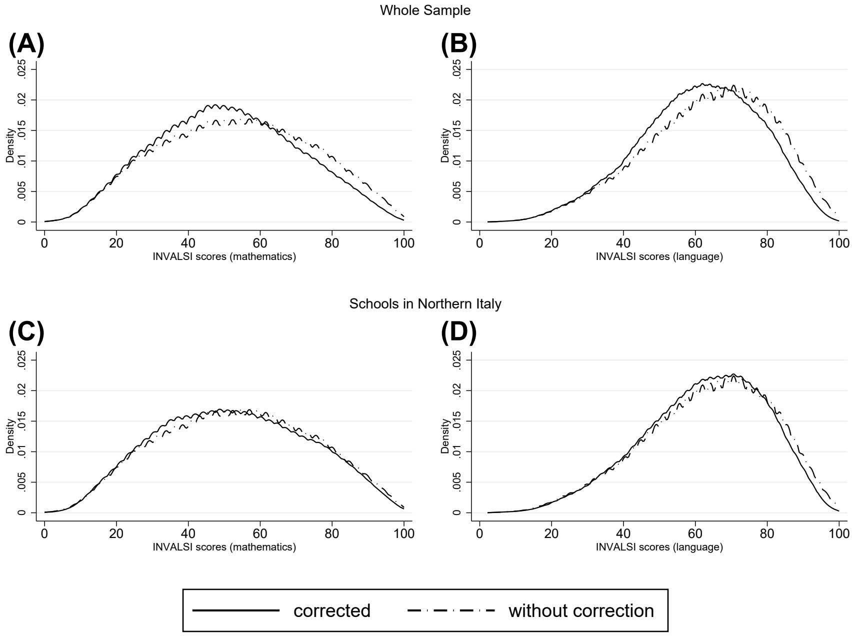

Figure 10: Distributions of INVALSI scores before and after correction for cheating. Figure 10 highlights the changes in the INVALSI scores after corrections for cheating. Panels (A) and (B) show the distributions for our main working sample with 46,264 observations. Panels (C) and (D) show the distributions for the students of schools based in Northern Italy, with 19,553 observations.

Panels (A) and (B) show that the distribution is noticeably more symmetric for corrected scores.

To test the robustness of our results, we could take advantage of the empirical evidence showing that the presence of an external monitor (that INVALSI randomly assigns to a small sample of schools at high risk of cheating) significantly mitigates the problem (Bertoni, Brunello, and Rocco 2013; Bertoni et al. 2021). Nonetheless, working with a 10% sample of the overall population, we cannot identify a large enough number of schools that hosted an external monitor to run a sensitivity analysis. We rather focus on geographical heterogeneity. In fact, cheating behaviour is heterogeneously distributed in Italy and score manipulation is less likely to occur in the Northern part of the country. In Panels (C) and (D) of Figure 10, we show that the distributions of test scores changes very little in Northern Italy, compared to the full sample, after correcting for cheating, a result in line with the evidence documented by Angrist, Battistin, and Vuri (2017).

Table 9: Results on school choice and received advice for schools located in Northern Italy.

	(1) Academic track	(2) Academic advise
1st gen.	−0.06***	−0.05***
	(0.01)	(0.02)
2nd gen.	−0.04***	−0.04**
	(0.01)	(0.01)
N. of schools	3076	2655
N	19,553	15,322

Table 9 reports results on the academic track choice in column (1) and receiving advice to enroll in academic track high-schools in column (2). The sample covers only the schools based in the North-East and North-West of Italy. Standard errors are clustered at school level. List of control variables in each regressions: INVALSI scores, final marks, gender, mother's and father' education, mother's and father's occupation, and school dummies. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Taking this into account, we replicate our analysis on school choices and teachers' recommendations focusing on schools located in Northern Italy only.[11] Table 9 shows that our results do not change. There still emerge significant gaps in both school choices and teachers' recommendations, consistently with our main findings in the baseline specifications.

7.2 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 ones whose scores in mathematics and language INVALSI tests are at most fifteen points away from each other in absolute terms, which is the average value of the difference. 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 1503 (after replacement 1711) Italian students and 1205 immigrant students (509 first-generation and 696 second-generation immigrants) from 950 schools.

11 We consider both East- and West-Northern Italy.

Figure 11 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 provides an accurate estimate of the gap between the high school choices of immigrants and natives.

The results obtained by applying Eq. (1) to the matched sample are shown in Table 10. In column (3)—reporting the results of our preferred specification—we observe that first-generation immigrants are 7 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 Italian students 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 spent in Italy plays an important role in explaining the differences in school choices.

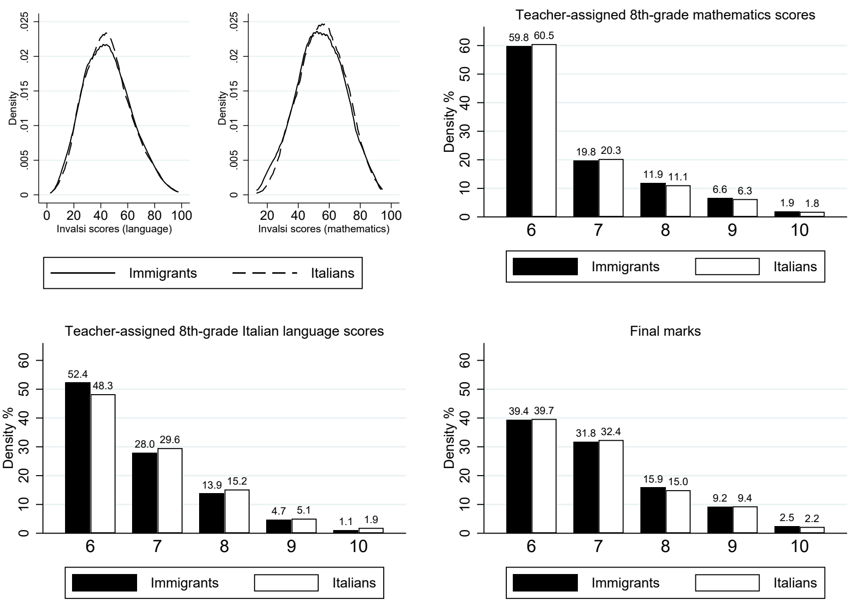

Figure 11: Students' composition in the matched sample.
Figure 11 highlights the main characteristics of the students included in the matched sample, N: 2916. Teacher-graded scores refer to the scores of eighth-grade students.

Table 10: Results on school choice from matched sample.

	(1)		(2)		(3)	
	Academic track		Academic track (F)		Academic track (M)	
1st gen.	−0.074**	(0.029)	−0.055	(0.052)	−0.077**	(0.037)
2nd gen.	−0.003	(0.028)	−0.015	(0.046)	0.014	(0.036)
Female	0.192***	(0.045)				
Invalsi mathematics	0.001	(0.001)	0.002	(0.002)	0.000	(0.002)
Invalsi language	0.002*	(0.001)	0.001	(0.003)	0.003	(0.002)
Final marks. omitted: 6≤						
7	0.175***	(0.048)	0.220**	(0.090)	0.130*	(0.078)
8	0.294***	(0.066)	0.244	(0.151)	0.191*	(0.100)
9	0.439***	(0.085)	0.471***	(0.152)	0.339**	(0.172)
10	0.563***	(0.094)	0.294***	(0.101)	0.551***	(0.131)
Father's occupation. omitted: unemployed						
Househusband	0.121	(0.177)	0.048	(0.163)	0.033	(0.310)
Manager/academics	0.242*	(0.140)	0.086	(0.216)	0.347*	(0.183)
Entrepreneur/property owner	−0.010	(0.088)	0.034	(0.163)	−0.040	(0.113)
Self-employed	0.036	(0.072)	0.070	(0.120)	0.060	(0.102)
Employee	0.027	(0.062)	0.052	(0.103)	0.039	(0.084)
White-collar/teacher	0.076	(0.070)	0.133	(0.117)	0.074	(0.094)
Blue-collar	0.022	(0.055)	0.108	(0.093)	−0.015	(0.075)
Retired	0.015	(0.124)	0.132	(0.176)	−0.095	(0.219)
Missing	0.017	(0.075)	0.102	(0.117)	−0.020	(0.105)
Mother's occupation. omitted: unemployed						
Housewife	0.034	(0.048)	−0.052	(0.091)	0.074	(0.056)
Manager/academics	0.054	(0.136)	−0.224*	(0.126)	0.120	(0.196)
Entrepreneur/property owner	0.233**	(0.103)	0.353**	(0.176)	0.202	(0.133)
Self-employed	0.025	(0.074)	−0.052	(0.118)	0.065	(0.106)
Employee	0.125*	(0.067)	−0.006	(0.113)	0.202**	(0.088)
White-collar/teacher	0.059	(0.059)	−0.022	(0.104)	0.119*	(0.072)
Blue-collar	−0.011	(0.053)	−0.111	(0.094)	0.063	(0.063)
Retired	0.139	(0.332)	−0.294**	(0.143)	0.453	(0.433)
Missing	0.002	(0.065)	−0.097	(0.112)	0.047	(0.084)
Father's education. omitted: middle or less						
High school	0.041	(0.029)	0.051	(0.054)	0.052	(0.036)
College degree	0.113**	(0.051)	0.115	(0.095)	0.172**	(0.072)
Missing	0.026	(0.055)	−0.013	(0.096)	0.052	(0.067)

Table 10: (continued)

	(1)		(2)		(3)	
	Academic track		Academic track (F)		Academic track (M)	
Mother's education. omitted: middle or less						
High school	0.022	(0.030)	0.032	(0.055)	−0.007	(0.037)
College degree	0.190***	(0.050)	0.168*	(0.089)	0.213***	(0.067)
Missing	0.110**	(0.055)	0.134	(0.097)	0.090	(0.069)
School FE	Yes [935]		Yes [483]		Yes [555]	
Observations	2916		1314		1602	
R^2	0.586		0.572		0.611	

The dependent variable is the probability of choosing an academic track high school. 1st gen. stands for the first-generation immigrants, and 2nd gen. stands for the second-generation immigrants. Column (2) reports the results for female students, column (3) shows them for male students. Standard errors in parentheses and clustered at the school level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

7.3 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 on the 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.[12] We choose vocational schools as the baseline category in our outcome. Unconditional means are presented in Figure 12. 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

12 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.

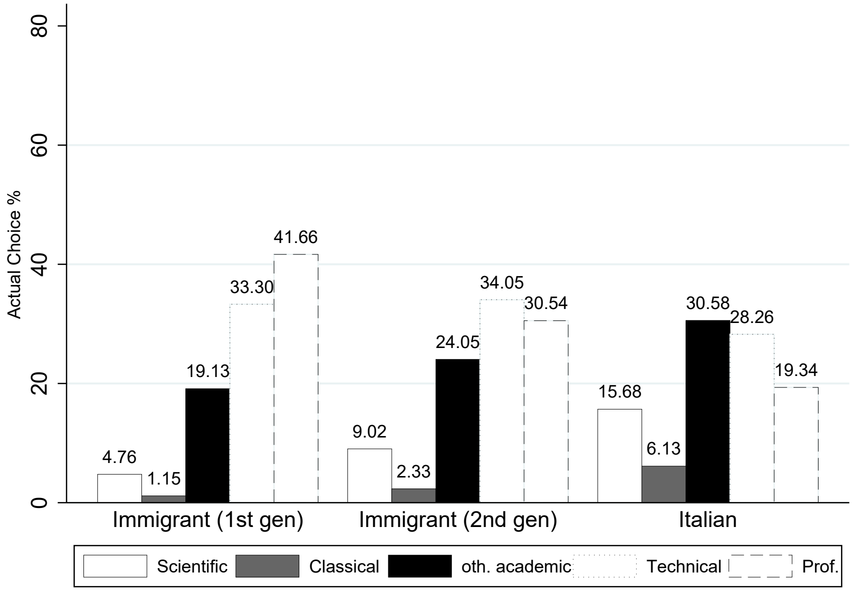

Figure 12: Students' school choice.
Figure 12 plots the average probability of choosing high school tracks (scientific academic, classical academic, other academic, technical, and professional) by first- (1st gen) and second- (2nd gen) generation immigrants, and Italian students. N: 46,264.

(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 11 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.[13] 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 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,

13 The marginal effects presented in Table 11 are estimated ex-post based on the results of a multinomial probit model in which the base category is the professional school track.

Table 11: Results from multinomial probit model.

Panel A: full sample	Prof (1)	Tech. (2)	Oth Academic (3)	Classic. (4)	Scientific (5)
1st gen.	0.092***	0.075***	−0.066***	−0.040***	−0.060***
	(0.009)	(0.013)	(0.013)	(0.009)	(0.012)
2nd gen.	0.043***	0.055***	−0.046***	−0.027***	−0.025***
	(0.008)	(0.010)	(0.011)	(0.006)	(0.008)
Female	0.008**	−0.221***	0.204***	0.030***	−0.021***
	(0.004)	(0.005)	(0.005)	(0.002)	0.004
Invalsi math	−0.002***	0.0001	−0.0004**	−0.0003***	0.003***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
Invalsi IT	−0.004***	−0.001***	0.003***	0.001***	0.001***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)
Final mark	−0.075***	−0.047***	0.032***	0.027***	0.062***
	(0.005)	(0.004)	(0.004)	(0.002)	(0.005)
Observations	46,264	46,264	46,264	46,264	46,264

Panel B: results by gender	Prof		Tech.		Oth Academic		Classic.		Scientific	
	Female (1)	Male (2)	Female (3)	Male (4)	Female (5)	Male (6)	Female (7)	Male (8)	Female (9)	Male (10)
1st gen.	0.076***	0.105***	0.076***	0.066***	−0.060***	−0.065***	−0.064***	−0.016	−0.030*	−0.090***
	(0.011)	(0.013)	(0.011)	(0.019)	(0.019)	(0.014)	(0.016)	(0.010)	(0.017)	(0.017)
2nd gen.	0.028***	0.057***	0.068***	0.033**	−0.050***	−0.065***	−0.044***	−0.011*	−0.003	−0.046***
	(0.010)	(0.011)	(0.012)	(0.016)	(0.015)	(0.014)	(0.010)	(0.006)	(0.012)	(0.010)

Table 11: (continued)

Panel A: full sample	Prof (1)	Tech. (2)	Oth Academic (3)	Classic. (4)	Scientific (5)					
Controls: INVALSI, final mark	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	22,633	23,631	22,633	23,631	22,633	23,631	22,633	23,631	22,633	23,631

Table 11 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. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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 7% 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 1.2% and 2.3% of first- and second-generation immigrant students, respectively, choose to attend a *liceo classico*, compared with 6.1% of Italian students, while 4.8% and 9% of first- and second-generation immigrant students, respectively, choose a *liceo scientifico*, compared with 15.7% 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 versus 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 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 that are heterogeneous between genders 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 smaller and 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 teachers' 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, as already noted always in the case of Italy for low background students by Barone et al. (2017). 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, it can be helpful "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.

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