Horizontal Advantage: Choice of Postsecondary Field of Study among Children of Immigrants

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Forthcoming in *Demography*

Abstract

Educational expansion has raised the influence of sorting across postsecondary educational fields for children's future life chances. Yet, little is known about horizontal ethnic stratification in choice of field of study among children of immigrant parents who, while often having moderate absolute levels of education compared to native-born parents, tend to be positively selected on education relative to non-migrants in the origin country. Using rich administrative data from Norway, we study the educational careers of immigrant descendants relative to children of native-born parents. Our results show that children of immigrants from non-European origin countries have higher likelihood of entering higher education and enroll in high-paying fields of study compared children of natives despite poorer school grades and disadvantaged family background. However, immigrant parents' positive selectivity provides limited insight into why children of immigrants exhibit high ambitions later in their postsecondary educational careers. These findings document a persistent pattern of horizontal ethnic advantage in postsecondary education, where ambitious children of immigrants enter into more prestigious and economically rewarding fields of studies than their fellow students with native-born parents.

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Acknowledgments: Earlier versions of this paper were presented at the International Sociological Association Research Committee 28 (RC28) on Social Stratification and Mobility's Spring Meeting 2021 in Turku, the Nordic Demographic Symposium 2022 in Oslo, the Norwegian Demographic Association annual meeting in 2022, and seminars at the Nordic Institute for Studies in Innovation, Research and Education, University of Oslo, and Stockholm University. We thank Anthony Heath, Magnus Bygren, Nicolai Topstad Borgen, Gunn Elisabeth Birkelund, and participants at the abovementioned events for helpful comments. This research was funded by the Research Council of Norway (grant numbers 236793, 314249, and 300917), NordForsk (grant number 95263), and is part of the Center for Research on Equality in Education (CREATE; funded by the Research Council of Norway, grant number 331640). The study used Norwegian administrative data provided by Statistics Norway. Due to confidentiality reasons these data are not publicly available, but can be accessed upon receiving relevant approvals.

Introduction

Successful incorporation of children from disadvantaged immigrant families into the educational systems of Western immigrant-receiving countries is a key challenge in the 21st century (Alba, Sloan and Sperling 2011; Drouhot and Nee 2019; Heath, Rethon and Kilpi 2008). Because of disadvantages experienced by their immigrant parents, such as limited language proficiency, neighborhood disparities, and ethnic discrimination, children of immigrants often face difficulties in terms of low school achievement and heightened risks of early school leaving (Heath et al. 2008; Kao and Thompson 2003). However, children of immigrants often exhibit higher transition rates into academic upper-secondary tracks and postsecondary education relative to children of native-born parents with comparable socioeconomic origins (Glick and White 2004; Heath and Brinbaum 2014; Jackson, Jonsson and Rudolphi 2012; Keller and Tillman 2008). Prior research points to high aspirations as a key explanation of immigrant-background students' bold educational choices (Friberg 2019; Jackson et al. 2012; Kao and Tienda 1998). Unpacking this phenomenon of high aspirations—which has been referred to as 'immigrant optimism' (Kao and Tienda 1995), 'second generation advantage' (Kasinitz et al. 2008), or an 'immigrant drive' (Portes and Rumbaut 2001)—is central for improving our understanding of future ethnic stratification and assimilation across immigrant generations.

Large-scale immigration in recent decades has coincided with an expansion of higher education and inflation in educational degrees across Western societies (Alon 2009; Gerber and Cheung 2008; Lucas 2001). With growing numbers of university students, horizontal differences across different fields of study within postsecondary education have gained importance for graduates' future earnings, occupational attainment, and career outcomes (Borgen and Mastekaasa 2018; Kim, Tamborini and Sakamoto 2015; Reimer, Noelke and Kucel 2008). Children from advantaged family backgrounds not only complete more education (Jackson 2013) but also tend to enter more prestigious fields of study (Ayalon and Yogeve 2005; Davies

and Guppy 1997; Helland and Wiborg 2018; Hällsten 2010; Kraaykamp, Tolsma and Wolbers 2013). Prior research from Europe and North America report that immigrant-background students often have a high propensity to enter higher education (Glick and White 2004; Heath and Brinbaum 2014; Jackson et al. 2012; Keller and Tillman 2008), but much less is known about horizontal ethnic stratification postsecondary education. In this study, we ask whether children of immigrants enroll in prestigious educational fields with higher economic returns than children of native-born parents.

We investigate differences between children of immigrants and children of native-born parents in entry to postsecondary education, sorting into different educational fields of study and the expected labor market returns of the educational fields they enroll in. Specifically, we explore whether horizontal ethnic inequalities in choice of postsecondary educational field can be explained by earlier academic achievement and differences in family background related to immigrant parents' length of education and pre-migration social status in the country of origin. To address these issues, we draw on high-quality microdata from Norwegian population registries that provide detailed information on children's educational careers and parental resources.

There are several reasons to expect ethnic differentials in choice of postsecondary educational field. Immigrant parents may lack local institutional knowledge about how to succeed in the labor market and encourage their children to choose well-known fields of study that carry a high prestige in the country of origin (Chiswick 1988; Jonsson and Rudolphi 2011). Further, immigrants and their native-born children may expect to face ethnic discrimination in the labor market, which could increase motivation to select educations that provide economic security and high earnings (Heath et al. 2008; Salikutluk 2016). Children who grow up in low-income immigrant families may also be more prone to focus on the material and economic benefits of education (Inglehart 1997) thus gravitating towards educational fields that likely provide secure career outcomes and higher earnings.

However, a recent stream of studies argues that immigrant descendants' high educational aspirations are related to the positive selection of their immigrant parents on traits such as perseverance, health, and education relative to non-migrants in their country of origin (Feliciano 2020). Positive educational selectivity among immigrants has been documented across a broad range of destination countries (Engzell and Ichou 2020; Feliciano 2005b; Van de Werfhorst and Heath 2019) and is found to contribute to high aspirations and educational advancement in the native-born second generation (Engzell 2019; Feliciano 2020; Feliciano and Lanuza 2017; Ichou 2014). We expand this literature and hypothesize that children of positively selected immigrants are more likely to make ambitious choices in postsecondary education and sort into fields of study with higher economic returns than children of natives.

Norway has an ethnically diverse and large immigrant population—the foreign-born population share is comparable to that found in France, Germany, Netherlands, and the United Kingdom—which is characterized by different selection patterns due to considerable inflows of labor migrants and refugees over the past decades (Brochmann and Kjeldstadli 2008; OECD 2022; Statistics Norway 2023). Norway is of comparative theoretical interest for horizontal educational stratification among children of immigrants, as it allows for investigating how the phenomenon of 'immigrant optimism' in education unfolds in a context relatively unrestricted by institutional obstacles. Economic barriers to access to university-level education are low—due to free tuition, affordable loans, and generous subsidies to students—and lack of early ability tracking reduces the influence of academic achievement at earlier stages of schooling (Bol and Van de Werfhorst 2013; Jackson et al. 2012). Overall, this should expand the role of other determinants of educational choices, such as student ambitions and parental pre-migration status, throughout children of immigrants' educational careers in the Norwegian choice-driven school system.

Background and Previous Literature

Existing research on educational inequalities between children of immigrant and native-born parents reveals complex and divergent patterns, depending on whether the focus is on achievement outcomes, such as grades or test scores, or educational decision-making and completed levels of education. Children of immigrants from some regions tend to perform worse on standardized tests and receive poorer school grades than their average non-migrant counterparts, although their achievements are often comparable to native peers of disadvantaged families (Heath and Brinbaum 2014; Schnepf 2007). For example, children of Turkish and North African immigrants often lag behind in European countries, while children of Hispanic origins tend to be disadvantaged in the United States (Drouhot and Nee 2019; Heath et al. 2008). By contrast, children from other origin regions, often of Asian background, outperform natives and have been referred to as so-called ‘model minorities’ (Lee and Zhou 2015; Sakamoto, Goyette and Kim 2009).

Interestingly, progression to higher attainment levels reveals a different picture. Compared to children with similar educational achievements and socioeconomic background, children of immigrants often excel relative to native students (Heath and Brinbaum 2014; Jackson et al. 2012). Notably, comparatively high shares of immigrant students continue into postsecondary education despite poor achievement levels (Glick and White 2004; Heath and Brinbaum 2014; Jackson et al. 2012; Keller and Tillman 2008). Notwithstanding increased understanding of educational career progression from primary school into university-level education (Glick and White 2004; Heath and Brinbaum 2014; Jackson et al. 2012; Keller and Tillman 2008), few studies have explored ethnic differences in college choice and educational fields (Ma 2009; Song and Glick 2004; Xie and Goyette 2003).

However, rapid growth in the number of students in postsecondary education over the past decades has led to an inflation in educational degrees, and horizontal differentiation in

higher education arguably matters more for graduates' future earnings, occupational attainment, and other employment-related outcomes today (Borgen and Mastekaasa 2018; Kim et al. 2015; Reimer et al. 2008). Children of less-educated native-born parents tend not only to complete less education compared to those from better-off family backgrounds (Breen and Jonsson 2005) but also often select educational programs with shorter duration, lower earnings, and less prestige (Davies and Guppy 1997; Helland and Wiborg 2018; Hällsten 2010; Van de Werfhorst, De Graaf and Kraaykamp 2001). Whether children of immigrants resemble disadvantaged children of natives or rather display higher academic ambitions by sorting into post-secondary educational fields with higher prestige and better economic payoffs are key questions that have been largely left unanswered.

Several mechanisms could explain the high educational ambitions often found among children of immigrants. One proposed explanation emphasizes that immigrant parents anticipate ethnic discrimination and blocked opportunities for their children in blue-collar occupations and low-wage segments of the labor market where they themselves have been employed (Heath et al. 2008; Salikutluk 2016). If immigrant parents perceive the labor market for university graduates to be more meritocratic, they may encourage their children to pursue high degrees to avoid unemployment and low-paid jobs (Jonsson and Rudolphi 2011). Moreover, the anticipation of discrimination and blocked opportunities may also cause immigrant parents to steer their children into study programs with more secure access to employment and better earnings prospects. For example, there is evidence that licensed occupations, where access is limited to individuals holding specific educational credentials (e.g., health professions and law degrees), reduce immigrants' earnings disadvantage relative to natives (Drange and Helland 2019). The labor market for university graduates is often found to be more meritocratic, as the impact of social origins on the career outcomes of college-educated workers is reduced (Breen and Jonsson 2007; Hout 2012; Mastekaasa 2011).

A second, perhaps paradoxical, reason to expect high educational ambitions among children of immigrants is related to immigrant parents' lack of knowledge about culture and institutions, which makes them less able to help their children navigate the educational system (Bleakley and Chin 2008; Casey and Dustmann 2008). Such lack of cultural and institutional knowhow may also make immigrants encourage their children to select educational fields that are well-known to carry prestige in most countries (Chiswick 1988). The prestige of occupations is similar across countries (cf. Treiman 1977) and, as Xie and Goyette (2003:490-491) argue, immigrant children may make 'strategic adaptations' by placing higher premia on the "instrumental value, rather than the intrinsic value, of formal education" and thus favor "fields of high demand in the economy, as their preferred channel of mobility." Relatedly, many children of immigrants experience economic hardship and insecurity while growing up and may be more prone to emphasize so-called materialistic-survival values as opposed to self-expressive values, which include a focus on non-monetary rewards such as creativity and self-fulfillment (Inglehart 1997). According to this argument, individuals from disadvantaged backgrounds may be more focused on avoiding economic insecurity. This, in turn, might cause them to be more motivated to enter educational fields that can provide them with personal financial gains and provide a secure income for their family and other close kin.

It has, however, been argued that lack of knowledge about the host country's educational system may lead children of immigrants to make (overly) ambitious choices by underestimating the requirements and demands for attaining higher degrees in prestigious fields of study (Birkelund 2020; Dollmann and Weißmann 2020; Tjaden and Hunkler 2017). Thus, ambitious choices are not necessarily transformed into completion of the chosen education. Further, high ambitions among children of low-income immigrants could be blocked by expensive tuition fees and pay for other living costs at the elite universities that offer more selective and advanced fields of study. However, the lack of parental financial

resources should be less relevant in egalitarian educational systems where economic barriers are strongly reduced, which, to a larger extent, allows high educational aspirations to be manifested through ambitious educational choices (Jackson et al. 2012).

A third possible cause of ambitious choices of postsecondary educational fields is related to children of immigrants' attempts to regain their parents' pre-migration social status. It has long been acknowledged that immigrants are a selected group relative to non-migrants (Lee 1966; Ravenstein 1885), as captured by Lee's (1966:56) famous statement that "migrants are not a random sample of the population at origin." Recent studies argue that positive self-selection among immigrant parents—who often have comparatively high levels of education relative to their non-migrant compatriots in the home country—is a key explanation of their children's high educational aspirations (Engzell 2019; Feliciano 2020; Feliciano and Lanuza 2017; Ichou 2014). For example, immigrants who experience downward occupational mobility upon arrival (Akresh 2008; Chiswick, Lee and Miller 2005) may hold on to a subjective reference group and family culture that reflects their social status prior to migration (Engzell and Ichou 2020). In a situation of transnational status inconsistency—referred to as the 'the status paradox of migration' (Nieswand 2012)—immigrants may transmit to their children a set of cultural dispositions, beliefs, and other non-material resources that primarily reflect their earlier class position. For example, Feliciano and Lanuza (2017:215) argue that "[i]mmigrants' children may internalize their parents' pre-migration class orientations and parents' narratives of hardships, propelling them to vindicate their parents' sacrifices through their own success."

Suppose migrants leave their origin country with the aim of achieving socioeconomic progress after settling in a new country. If they are barred from achieving this goal, they may transmit their ambitions to their children (Louie 2012) and the relative position in the status hierarchy before migration may serve as the benchmark under which they do not want their children to fall below (cf. Boudon 1974). However, immigrants' children may need to complete

substantially higher absolute levels of education than their parents to retain—let alone improve—their parents’ pre-migration socioeconomic position (Engzell 2019; Feliciano and Lanuza 2017; Ichou 2014). Importantly, in contexts of educational expansion, children of positively selected immigrants may need to seek out opportunities along horizontal dimensions within higher education and aim to enroll in more selective fields of study that yield high status and economic returns in order to regain or improve their parents’ relative status in the origin country. If immigrants’ educational selectivity is positively associated with their second-generation occupational status aspirations (Engzell 2019), it seems likely that this will raise the likelihood of their children pursuing prestigious educational trajectories also along horizontal dimensions.

Children of immigrants do, however, face potential barriers to reinstating their parents’ pre-migration social position by enrolling in prestigious educational fields since this requires not only high ambitions but also high achievements. In this regard, Boudon’s (1974) classical distinction between the ‘primary effects’ (i.e., educational achievement inequality) and ‘secondary effects’ (i.e., educational choice inequality) of family background on educational careers is also highly relevant for studies of ethnic stratification in schooling (Engzell 2019; Heath and Brinbaum 2014; Jackson et al. 2012). School grades or standardized achievement tests are central criteria for accessing high-status selective fields of study. Immigrants’ children often lack access to socioeconomic resources as well as cultural and institutional knowledge that facilitate academic achievement and ease access to more selective study programs, which means they face disadvantages in entry to higher education. Nonetheless, positively selected immigrant parents may transmit skills and other non-pecuniary resources to their children that aid their academic achievements. Economists, for example, argue that immigrants often are self-selected on skills and abilities, which can explain upward earnings assimilation in the years after facing initial barriers in the labor market (Borjas 1987; Chiswick 1978). Empirical

research has found immigrants to be positively selected on both skills and health (Akresh and Frank 2008; Chiquiar and Hanson 2005), which are factors that likely can positively affect their children's academic achievements in school.

Previous research on the link between immigrants' educational selectivity and their children's schooling have primarily focused on completed levels of education. Feliciano's (2005a, 2005b) seminal studies used aggregate data to show the likelihood that an immigrant to the United States was more or less educated than those who stayed behind in the country of origin and showed that this selectivity could explain group-level differences in schooling between immigrant descendants of different national origins. Feliciano and Lanuza (2017) have demonstrated that also individual-level measures of parental educational selectivity help explain why most groups of immigrant descendants in the United States complete more education than children of non-migrant White Americans. These educational advantages are, in large part, mediated by parents' and children's aspirations and expectations. Similarly, Ichou (2014) has shown that the relative educational attainment of immigrants to France predicts their children's educational attainments after adjusting for post-migration socioeconomic resources. Using Swedish data, Engzell (2019) demonstrated a positive influence of parental educational selectivity on continuation into academic upper-secondary tracks, career aspirations, and attitudes to schooling among immigrants' native-born children in the second generation. Despite these important contributions, little is known about how children of immigrants' sorting across post-secondary educational fields is related to their parents' educational selectivity. Addressing this knowledge gap constitutes a key aim of the present study.

The Norwegian Context

Norway is interesting due to the combination of a large and ethnically diverse immigrant population and an institutional context characterized by low economic inequality, strong welfare-

state institutions, and an open educational system (Esping-Andersen and Myles 2011; OECD 2022). Early waves of labor migration from Pakistan, Turkey, and Morocco started in the late 1960s. In the late 1970s and into the 1980s, immigration shifted toward refugees arriving from Vietnam, Chile, and Iran and, in the 1990s, from Yugoslavia, Somalia, and Iraq (Brochmann and Kjeldstadli 2008). In 1970, immigrants and their native-born children made up only 1.5% of the Norwegian population, but this share has risen to 20% by 2023 (Statistics Norway 2023). Currently, the relative size and ethnic diversity of the Norwegian immigrant population are comparable to that found in other major immigrant-receiving countries in Western Europe (OECD 2022).

Immigrants arriving in Norway as labor migrants and refugees, often with low absolute levels of formal education, tend to experience low employment and difficulties in the labor market (Bratsberg, Raaum and Røed 2014) and child poverty rates are high within many immigrant minorities (Galloway et al. 2015). Children of immigrants from Pakistan, the Middle East, North Africa, and Latin America typically experience disadvantages in terms of school grades and early school leaving, while children with backgrounds from many East Asian countries outperform natives (Bratsberg, Raaum and Røed 2012). Differentials in upper-secondary completion rates between children of immigrants and natives have steadily declined since the mid-2000s (Bratsberg et al. 2012; Reisel, Hermansen and Kindt 2019). Overall, children of immigrants in most national origin groups complete more education than their foreign-born parents, and their improved educational attainment is converted to considerable intergenerational progress in the labor market (Bratsberg et al. 2014; Hermansen 2016; Reisel et al. 2019).

Equal right to free education is a defining feature of the educational system in Norway, which may mitigate adverse consequences of early-life disadvantage on children's life chances (Imsen and Volckmar 2014). Public schools do not have tuition fees and are considered to be of high quality (Lauglo 2010). These public schools absorb the vast majority of students at all

educational levels, including students in compulsory education (primary and lower secondary school, grades 1–10), upper secondary education (either a four-year vocational track or a three-year academic track leading to a University and College Admission Certification), and in post-secondary education (three-year Bachelor, two-year Master, and Ph.D. degrees). There is no formal ability tracking, and all children are entitled by law to enter upper secondary education regardless of academic achievements. Consequently, Norway constitutes an institutional context where academic ambition and educational choice are given more room in children’s academic careers compared to settings where students from disadvantaged backgrounds are constrained by early tracking and parental financial resources.

Data and Variables

We use administrative microdata from Norwegian population registers, where an anonymized system of unique personal identifiers enables us to link information on immigration background and educational outcomes. Further, we link children to their parents, which provides information on parental education and other socio-demographic family background characteristics. We link the administrative data to the Barro-Lee (2013) database, which contains information on educational attainment in 146 countries.¹ Information is obtained from UNESCO Statistical Yearbooks, UN Demographic Yearbooks, and other national publications. Combining information on individual educational attainment from administrative registers in Norway and educational distributions in origin countries from the Barro-Lee data allows us to develop a measure of parents’ educational status relative to their non-migrant compatriots in the home country, as described below. The Barro-Lee data compilation is considered the most

¹ For each country, the Barro-Lee data holds information on the educational distribution by sex and birth cohort within five-year intervals and distinguishes educational attainment by seven categories: no formal education, incomplete primary, complete primary, lower secondary, upper secondary, incomplete tertiary, and complete tertiary education, as well as the mean years of education.

comprehensive data source for this type of information and is used in prior studies on educational selectivity (Engzell 2019; Feliciano and Lanuza 2017; Ichou 2014).

We restrict our sample to children of two Norwegian-born parents and children of two foreign-born parents, who were either born in Norway or immigrated before age seven in the birth cohorts 1985–1997. We exclude children who have parents with different birth countries (i.e., ‘mixed origin’). To study enrollment in postsecondary education and choices of field of study, we follow individuals’ educational careers up to age 23. Following Engzell (2019), we exclude children whose immigrant parents arrived before age 25 since it is less plausible that younger parents’ highest educational attainment was obtained in the country of origin. Finally, children of parents from Kosovo, Bosnia-Herzegovina, and Somalia are not included as information on educational distribution in these countries are not available in the Barro-Lee dataset. Using these restrictions provides an analytical sample of 673,674 observations. Table 1 presents descriptive statistics separately for children of immigrant parents (n=19,999) and non-migrant parents (n=653,675).

< Table 1 >

Variable Measurement

Our empirical focus is on the educational careers of children of immigrants relative to children of native-born parents. We use a dichotomous measure of children’s immigrant background, differentiating between children with two foreign-born parents and children with two native-born parents. Further, we distinguish between eight major origin groups: children of Pakistani, Iraqi, Vietnamese, Iranian, Sri Lankan, Chilean, Turkish, and Indian immigrants, and two

groups of remaining children of immigrants from other non-Western countries and other Western countries (see Appendix A for group sizes).²

We construct a set of educational outcomes which are all measured at age 23. First, *enrollment in postsecondary education* is a dichotomous indicator of whether the individual is currently enrolled in, or has completed, a postsecondary degree (yes=1, no=0). Second, we study horizontal ethnic stratification by differentiating between enrollment in eight *fields of study* within postsecondary education. We distinguish between the following broad fields of study: (1) education; (2) law; (3) business and administration; (4) health, shorter programs; (5) health professionals; (6) science and engineering; (7) arts and humanities; and (8) social sciences and other programs. We define an individual's field of education based on the highest alternative of either the first enrolled postsecondary education or currently enrolled education at age 23. We use the field of the currently enrolled education in cases where the first enrolled education and the currently enrolled education are at the same level but in different fields.

Third, we calculate the *expected earnings within each field of study* to provide a proxy for the individual's expected labor market outcomes based on the chosen field of study. The field-specific expected earnings are measured for each individual using information on the average annual earnings of all 16-year older graduates holding the same educational degree as the individual. To construct this measure, we extract the older graduates' pre-tax annual wages from employment and income from self-employment (capital income and social welfare transfers excluded) -which are captured with high accuracy from tax records - and average the graduate's annual earnings between the ages 35 and 37 years. Then, we rank the graduates based on their earnings relative to others in the same birth cohort, irrespective of sex, including those with zero earnings. This yields a symmetric variable that captures each graduate's percentile

² We define Western countries as Western European countries, North America, Canada, Australia, New Zealand, and Israel.

rank in the cohort-specific earnings distribution (Chetty et al. 2014), ranging from one (lowest) to 100 (highest), which is not affected by inflation trends. For each birth cohort, we collapse the relative earnings rank by a detailed measure of education that distinguishes between levels of educational attainment and postsecondary fields of study (i.e., 3-digit educational codes from the Norwegian version of the International Standard Classification of Education, distinguishing between 105 detailed fields of study) based on their highest completed educational degree at age 35. Finally, we match the average field-specific earnings rank of the older cohorts to the individuals in our analytic sample based on our measure of the postsecondary field of enrollment.

Table 2 provides information on the narrow fields of study covered by each of the eight categories, as well as the average expected earnings rank, grade achievement level (GPA, see detailed explanation below), and student distribution by immigrant background for each field. Students' prior grade achievement (z-standardized values) is higher in educational fields where expected earnings are also higher. Notably, there is a high concentration of children of immigrants in the field for health professional degrees—of about 10%—compared to about 3% in total among those enrolled in postsecondary education.

< Table 2 >

Figure 1 shows box plot distributions of students' field-specific expected earnings by immigrant background for the eight broad fields, where within-field variation in expected earnings reflects immigrant–native differences in sorting across the 105 detailed fields of study. Graduates with health professional degrees, including medical doctors and dentists, have the highest expected earnings rank, with median ranks above the eightieth percentile in their cohort-specific earnings distribution. Degrees from business and administration, law, and science

and engineering also have high expected economic returns, followed by degrees from the social sciences. Finally, graduates from the arts and humanities, education, and shorter degrees in health have expected earnings close to the fiftieth percentile in their cohort-specific earnings distribution. Overall, there are relatively small immigrant–native differences in expected earnings within each of the eight broad fields of study, but children of immigrants enroll in detailed fields of study with notably lower expected earnings within law and the social sciences.

< Figure 1 >

We use two key measures of family background as explanatory variables. First, *parental years of education* refer to the mean years of parental education when the child was 16 years old. Parental years of education is recoded from educational attainment levels, distinguishing between nine levels of attainment from those with no education or only primary education, through different levels of secondary and tertiary education, up to individuals with Ph.D. degrees (Online Appendix B).

Second, *parental educational selectivity* is measured following the rank-based approach used by Ichou (2014). Thus, we first recode the parental level of education when the child is 16 to the seven educational levels in the Barro-Lee dataset. Then, we calculate each parent’s educational rank relative to their same-sex and same-age (non-migrant) reference population in the origin country for the five-year period of measurement that overlaps with the year the child turns 16 years old. As described by Engzell (2019), the selectivity measure of an individual is given by

$$selectivity_{ij} = \sum_{k=1}^{k < j} p_k + 0.5p_j \quad (1)$$

, where p_j gives the percentage of the origin-country reference population with educational level j . Thus, a parent's selectivity value is the sum of the percentage of the parent's origin-country reference population with a lower education level plus half of the percentage of the reference population with an education level equal to the parent. We use the mean of the mother's and father's values to calculate the individual's parental educational selectivity. Using the same measure, we also calculate parental educational selectivity for children of native-born parents from the Barro-Lee data for Norway.³

Figure 2 provides a description of the relationship between the distribution of educational rank and years of completed education among immigrant parents (cf. Engzell 2019). Panel A shows a strong positive correlation between the individual-level values of the two measures ($\rho = .681$), where each dot refers to the two aspects of parental education for each child of immigrant parents. Panel B displays the same relationship aggregated to the level of national origin groups. The national origin groups found above the horizontal line (i.e., the median of the cohort-specific educational rank distribution in the origin country) are, on average, positively selected on education relative to the non-migrant reference category in the country of origin (y-axis). Groups found to the left of the vertical line are, on average, less educated than native-born parents of non-migrant backgrounds in Norway (x-axis).

< Figure 2 >

Despite the high individual-level correlation, origin groups with high average parental educational rank relative to the origin country often have considerably less parental schooling

³ Online Appendix C assesses the relative explanatory power of parental years of education and parental selectivity for children of immigrants. The likelihood of enrollment to postsecondary education is positively associated with parental selectivity, even after controlling for region of origin. Similarly, expected earnings of the chosen education is positively associated with parental selectivity, while parental years of education is not. This indicates that parental selectivity may play a role in explaining ethnic differences in later educational careers.

than the children of Norwegian-born parents. For example, immigrant parents from Pakistan, Vietnam, Iran, Iraq, Chile, and India are all positively selected on education, but, except for Chilean and Indian immigrants, they have completed fewer years of education than the national average in Norway. In contrast, Turkish immigrants are both negatively selected and have less education than native-born parents, while Sri Lankan immigrants have less education than native-born parents but seem not to be selected from their origin country. Immigrants from India are so-called ‘hyperselected’ (Lee and Zhou 2015), implying that they, on average, have higher educational ranks than non-migrants in their origin country and more education than native-born parents in Norway. Taken together, Figure 2 documents that a high degree of country-level educational selectivity often does correspond well with the length of schooling in the absolute sense.⁴

To measure students’ prior educational achievements, we use students’ *grade point average* (GPA) at the end of compulsory lower-secondary education, which is a composite of teacher-assigned grades and exam grades obtained in the year when most children turn 16 years old and available for all children regardless of later educational attainment. GPA is standardized within graduating cohorts, with a mean value of zero and a standard deviation of one.

Finally, all regression models reported below also adjust for basic sociodemographic background characteristics. These covariates are child sex, mother’s and father’s year of birth, number of siblings, birth order, information available on only one parent in registers, and birth cohort.

⁴ Online Appendix D provides information on intragroup variation in parental educational selectivity and documents significant variation in educational selectivity within origin groups.

Results

Ethnic Inequality in Enrollment in Postsecondary Education

Figure 3 summarizes results from a series of OLS regressions (linear probability models). Using information on complete birth cohorts, the models estimate gaps in the likelihood of being enrolled in postsecondary education relative to natives for all children of immigrants and separately by country of origin. We present coefficients from four different model specifications: (1) a model adjusting for basic sociodemographic background characteristics (child sex, mother's and father's year of birth, number of siblings, birth order, whether information on only one parent is available, and birth cohort) and then models where we successively add controls for (2) parental years of completed education, (3) parental relative educational rank, and (4) students' earlier grade achievements. These models allow us to assess baseline immigrant–native gaps in the probability of enrolling in postsecondary education and whether these gaps are attributable to differences in parental education and students' academic achievement. The coefficients are reported as marginal effects (probability changes in percentage points), where the probability of postsecondary enrollment ($y=1$) is assumed to be a linear function of the set of predictors (Wooldridge 2010).

< Figure 3 >

The results show a pattern of substantial ethnic advantage, where children of immigrants have considerably higher chances of enrolling in postsecondary education than the children of native-born parents. If we consider all origin countries combined, children of immigrants have an average of about 9 percentage-point higher probability of enrolling in university-level education. We observe a comparable pattern for most of the origin countries—Pakistan, Iraq, Vietnam, Iran, Sri Lanka, India, and other non-Western origins—ranging between

8–21 percentage-point higher likelihoods of entering postsecondary education. However, children of Turkish and Chilean, in particular, immigrants are considerably less likely to continue into postsecondary education, while children of Western immigrants do not differ from the natives.

Once we adjust for parental years of education, the pattern of ethnic advantage is even more pronounced. A plausible explanation is that parents' educational attainment is not an equally good proxy for parental resources transmitted across generations in immigrant families as it is in native families (Luthra and Soehl 2015). Immigrant parents may, for instance, have less education due to a lack of opportunity in their origin country rather than because of a lack of interest or abilities, while native-born parents with similarly low levels of education may be more negatively selected on skills or other unobserved traits. In this case, it could be that parental relative education better reflects immigrant children's socioeconomic background and thus better explains the high enrollment rates. Next, we therefore adjust for parental educational selectivity. Interestingly and in line with the argument above, controlling parental relative educational rank reverses the increased gap found in the model with only parental years of education. This suggests that the ambitious enrollment choices of children of immigrants, compared to children of natives with similar parental years of education, are partly due to parental educational selectivity. Nonetheless, substantial immigrant–native gaps in postsecondary enrollment remain after adjusting for both measures of parental education.

Finally, we add controls for prior educational achievement to assess whether differences enrollment persist even when comparing children of immigrants and children of native-born parents with similar achievement levels. As such, this model isolates the role of educational choice (“secondary effects”) relative to the influence of prior academic achievements (“primary effects”) in explaining the immigrant–native enrollment gaps by immigrant background. However, also adjusting for prior grade achievements does not alter the pattern substantively, and

considerable immigrant advantages in postsecondary enrollment remain. Children of immigrants—when we combine all origin regions—are close to 10 percentage points more likely to enter university-level education than natives net of all adjustments, but comparable or larger advantages—ranging between advantages of 7 to 22 percentage points—are found for children of Pakistani, Iraqi, Vietnamese, Iranian, Sri Lankan, Turkish, Indian, and other non-Western immigrants. Only children of Chilean and Western immigrants are less likely than natives to enter postsecondary education once we adjust for family background and prior educational achievements. To sum up, Figure 3 reveals a striking and persistent pattern of ‘immigrant optimism’. Children of most immigrant origins are substantially more prone to continue to university-level studies, which only to a limited degree is explained by differences in parental educational selectivity, parents’ absolute length of schooling, and students’ own prior academic achievements.

Ethnic Inequality in Choice of Postsecondary Field of Study

Our next task is to assess horizontal ethnic inequality in sorting across different postsecondary educational fields. Figures 4 and 5 summarize results from a series of OLS regressions (linear probability models) predicting enrollment in a given field of study for children of immigrants relative to children of natives conditional on having entered postsecondary education.⁵ For each panel, we regress binary indicators of whether a student enrolled in the given field or not on immigrant background, and the coefficients report the percentage-point gap in the likelihood of enrollment in a given field of study for children of immigrants relative to natives. Figure 4 reports results for the four lowest-paying fields—defined by the median of the field-specific expected earnings—are presented in ascending order from panel A (lowest; arts and

⁵ Online Appendix F shows that we reach similar conclusions from marginal effects obtained from a multinomial logistic regression model.

humanities) to D (highest; social sciences and other), while Figure 5 similarly reports estimates for the four fields with the highest expected earnings from panel A (lowest; business and administration) to D (highest; health professionals). For each panel, we start by reporting results from the model specification with basic adjustments, and then we successively add controls for parental years of education, parental educational selectivity, and prior grade achievement.

< Figure 4 >

< Figure 5 >

The results reported in Figure 4 show a clear pattern where children of immigrants are less likely than natives to enroll in the four fields of study that has the lowest expected earnings. This pattern is most pronounced for shorter health degrees—which include nursing and social work—and education, such as preschool, primary, and lower-secondary school teachers. With the exception of immigrant-background students of Chilean and Western origins, this pattern of lower enrollment probabilities is quite consistent across all other non-Western origin groups. Adjusting for parental years of education, parents' relative educational ranks, and earlier grades do not account for these field-specific immigrant–native enrollment gaps. In fact, adjusting for these background factors slightly accentuate the field-specific negative enrollment gaps relative to comparable students with native-born parents.

Figure 5 documents that children of immigrants' probabilities of being enrolled in the four highest-paying educational fields is, in contrast, similar to or higher than that of natives after making basic adjustments. This pattern is most pronounced for enrollment in health professional fields, which includes advanced degrees in medicine, dentistry, and pharmacy. On average, children of immigrants have a probability of pursuing a health professional education that is about 9 percentage points higher than that found among native students. Given that

almost 12% of immigrant students and less than 4% of native students in postsecondary education are enrolled in the health professional fields (cf. Table 2), immigrant students are more than three times as likely to pursue health professional educations compared to natives. Broken down by country of origin, this pattern of overrepresentation in health professional fields is similar for all origin groups except for children of Chilean and Turkish immigrants. For the remaining fields of study, there is a general pattern of higher enrollment among children of immigrants, but there is variation in which national origin group that is overrepresented in business and administration (Pakistan, Vietnam, Turkey, and India), law (Pakistan, Iraq, and Iran), and science and engineering (Vietnam and Sri Lanka). Overall, children of immigrants' sorting across fields of study reveal a pattern of horizontal ethnic advantage relative to natives within postsecondary education.

Our next task is to assess whether parental and student characteristics can explain the pattern of horizontal advantage. However, adjusting for family background and prior academic achievement does not provide a general account for the observed patterns although there is some variation in the immigrant–native gaps across different fields of study. For example, differences in parents' relative educational rank contribute to children of immigrants' higher enrollment in business and administration compared to natives, which can, in particular, be observed among children of Pakistani, Vietnamese, and Turkish immigrants. Immigrant selectivity seems to matter considerably less for the three remaining fields of study—law, science and engineering, and health professionals. Perhaps most strikingly, adjusting for parental educational rank seems, if anything, to only accentuate children of immigrants' enrollment advantage in the health professional field.

Taken together, these results do not provide any clear support to the argument that children of immigrants' highly ambitious choices and enrollment in higher-paying educational fields can be attributed to selective patterns of immigration and their parents' relative social

status in the origin country. In contrast, other types of explanations—such as strategic choices anticipating future discrimination or more instrumental views of the value of education—may hold the answer to why children of immigrants gravitate toward high-status fields of study with high economic returns.

Ethnic Inequality in the Expected Economic Returns from the Chosen Field of Study

How does sorting across different educational fields of study translate to future ethnic differences in the labor market? To address this question, we examine immigrant–native inequality in expected economic returns due to sorting across fields of study among students enrolled in postsecondary education. Figure 6 summarizes the results from a series of OLS regressions where students’ expected earnings rank is regressed on immigrant background using the same model specifications as reported above.

< Figure 6 >

We see that children of immigrants enroll in educational fields with higher economic returns than natives after adjusting for basic sociodemographic characteristics. On average, across all origin groups, children of immigrants enroll in educational fields with about 1.7 higher percentile ranks in expected earnings relative to natives. For children of immigrants from Pakistan, Vietnam, Sri Lanka, and India, the ethnic advantage in field-specific expected earnings is considerably higher and ranges between a 3.7 to 4.7 higher percentile rank compared to children of natives. Children of Chilean have markedly lower expected earnings than natives, a negative gap of 5.8, while children of Western immigrants also enroll in fields with lower economic returns. The remaining origin groups—Iraq, Iran, Turkey, and other non-

Western—enroll in fields with similar or slightly higher expected earnings compared to children of natives.

How are the estimated gaps affected by adjusting for parental years of completed education, parental educational selectivity, and earlier grades? The immigrant–native gaps in field-specific expected earnings are to a limited degree accounted for by controlling for any of these background factors. In most cases, the ethnic advantages experienced by children of immigrants increase once we control for family background and earlier academic achievements.

Overall, these results show that most second-generation immigrant minorities sort into postsecondary educational fields where they—all else equal—can expect to earn higher wages than comparable children of natives after graduation. However, these results—again—lend limited support to the argument that immigrants’ educational selectivity can explain their children’s choice of economically rewarding fields of study.

Discussion and Conclusions

Given the rapid expansion of higher education in recent decades, there is surprisingly little research addressing horizontal ethnic inequality in sorting across postsecondary fields of study and the consequences of this sorting for future life chances among new generations of children of immigrants. In this study, we investigate differences between children of immigrants and native-born parents in their likelihood of enrolling in postsecondary education, sorting into different fields of study, and how choice of educational field can shape their economic prospects using administrative data from Norwegian population registers. Further, we assess whether immigrant–native differences in family background and earlier academic achievements can explain patterns of horizontal ethnic inequalities within postsecondary education.

We report several key findings. First, we show that children of immigrants are more likely to enroll in postsecondary education than children of native-born parents. Second, and

most importantly, children of immigrants also have systematically higher likelihoods of self-selecting into fields of study with high expected earnings, such as degrees within business and administration, law, science and engineering, and health professions, such as medicine and dentistry. Based on ethnic differentials in choice of postsecondary educational field, children of immigrants have higher expected earnings compared to children of natives. Third, these educational advantages are not explained by differences in earlier academic achievements, parental educational attainment, or pre-migration social status and skill selectivity.

Overall, our findings reveal a persistent pattern of *horizontal ethnic advantage* where children of immigrants are both more likely to enter postsecondary education and to pursue more prestigious and economically rewarding fields of study compared to children of native-born parents despite being disadvantaged both in terms of earlier achievements and parental resources. Our findings show an ‘immigrant optimism’ that goes beyond earlier research focusing on continuation into upper-secondary academic tracks or higher educational attainment (Glick and White 2004; Heath and Brinbaum 2014; Jackson et al. 2012; Keller and Tillman 2008). Since horizontal stratification across fields of study is increasingly important for graduates’ future careers (Borgen and Mastekaasa 2018; Kim et al. 2015; Reimer et al. 2008), these salient ethnic advantages in postsecondary education may be central to continued second-generation socioeconomic progress observed in Norway and other immigrant-receiving countries (Drouhot and Nee 2019; Hermansen 2016).

The ambitious postsecondary educational choices observed among most children of immigrants signal rapid intergenerational assimilation and declining ethnic stratification, but such a conclusion should be made with caution. If ambitious educational choices are based on a miscalculation of their skills relative to the academic demands in the high-demanding study programs they enter, immigrant-background students can, first, experience ‘optimism traps’ where they face higher risks of non-completion and, subsequently, adverse labor market

outcomes (Birkelund 2020; Dollmann and Weißmann 2020; Tjaden and Hunkler 2017). Yet it should be noted that admission to high-prestige study programs in postsecondary education tends to be highly selective, where prior grades or test scores often are the key selection criteria, suggesting that negative skill selection may be less relevant factor in such cases. Second, graduating from educational fields with high expected earnings does not automatically translate into labor market success (Hout 2012). Given that children of immigrants often face ethnic discrimination and other barriers in the labor market (Hermansen 2013; Quillian et al. 2019), a key task for future research is to assess whether they reap the same economic returns to high-prestige educational degrees as their fellow graduates with native-born parents.

Moreover, immigrant parents' educational selectivity does not explain the ethnic advantages in entry to postsecondary education and sorting into high-rewarding fields of study seen among children of immigrants. Children of immigrants seek out opportunities along the horizontal dimension in postsecondary education, but we find no strong evidence indicating that these choices reflect strategic adaptations aimed at reinstating their foreign-born parents' pre-migration social position (Engzell 2019; Feliciano and Lanuza 2017; Ichou 2014). One alternative explanation for immigrant descendants' ambitious educational choices could be related to immigrant parents' lack of fine-tuned contextual knowledge about the intrinsic values of educational fields (Chiswick 1988; Xie and Goyette 2003), which may lead immigrant parents—irrespective of educational selectivity—to encourage their children to choose more traditional high-status educational fields. Another possible explanation of ambitious choices may be strategic behavior due to expected discrimination and other barriers in the labor market (Heath et al. 2008; Salikutluk 2016). For example, health professional educations—in which children of non-Western immigrants are much more likely to enroll than natives—often lead to licensed occupations, and occupational licensure often reduces ethnic inequality in the labor market (Drange and Helland 2019).

Our findings should be interpreted considering caveats that future research should address. First, our measure of parental educational selectivity does not capture (positive) selection relative to non-migrants in the origin country on other unobserved characteristics, such as class position, health, or personality traits (Feliciano 2020). Importantly, we measure selectivity from parents' educational attainment without information on their field of education, nor occupational specialization prior to migration (Potochnick and Hall 2021), which—through processes of cultural socialization—are likely to affect children's choice of education (Helland and Wiborg 2018; Jonsson et al. 2009). Further, we measure parents' selectivity as their education relative to a national distribution of educational level in their origin country, and not relative to local distributions. Consequently, our measure may be biased with regard to parents' self-perceived educational status from a local perspective.

In conclusion, this study documents an optimistic scenario of a horizontal ethnic advantage in postsecondary education among children of immigrants in the Norwegian welfare state context. It is, however, not obvious that this pattern will generalize to a broader set of immigrant-receiving countries. The Norwegian educational system is open and comprehensive, lacks early formal tracking, and has few economic barriers to entering high-prestige study programs, which arguably provides more room for choice-based mechanisms allowing high-aspiring children of immigrants to advance into postsecondary education (Jackson et al. 2012). This makes Norway a best-case scenario, where children of immigrants' ambitious educational choices and their potential consequences for labor market careers are likely to be less constrained than in more inegalitarian educational systems. Future comparative research is needed to establish the extent to which immigrant-background students' ability to maneuver into high-prestige postsecondary educational fields is more or less constrained by the opportunity structures found in different institutional contexts.

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Table 1: Descriptive statistics

Variable	All				Children of natives	Children of immigrants	Difference
	Mean	SD	min	max	Mean	Mean	
Grade point average	0.089	0.891	-3.847	17.564	0.094	-0.089	0.184***
Enrolled in postsecondary	0.539		0	1	0.537	0.584	-0.047***
Expected earnings from education	53.316	14.826	6	90	53.335	52.699	0.636***
Field of education, postsecondary							
Education	0.071		0	1	0.072	0.051	0.021***
Law	0.018		0	1	0.017	0.025	-0.008***
Business and administration	0.101		0	1	0.100	0.137	-0.037***
Health, lower	0.099		0	1	0.100	0.079	0.021***
Health professionals	0.021		0	1	0.020	0.069	-0.049***
Science and engineering	0.097		0	1	0.097	0.110	-0.013***
Arts and humanities	0.051		0	1	0.051	0.045	0.007***
Social sciences and other	0.078		0	1	0.078	0.067	0.012***
Parental years of education	12.521	2.376	6	19	12.549	11.599	0.950***
Parental selectivity	47.454	26.366	0.115	99.950	46.912	65.168	-18.256***
Sex	0.486		0	1	0.486	0.483	0.003
Year of birth	1991.138	3.694	1985	1997	1991.116	1991.865	-0.749***
Birth order	1.903	0.998	0	17	1.891	2.297	-0.407***
Number of siblings	2.009	1.238	0	19	1.992	2.556	-0.564***
Mother's year of birth	1962.931	5.910	1929	1984	1962.927	1963.081	-0.154***
Father's year of birth	1960.074	6.555	1915	1983	1960.128	1958.138	1.990***
Information on only one parent	0.011		0	1	0.007	0.121	-0.114***
Observations	673,674				653,675	19,999	

Observations: 673 674. Missing values handled by listwise deletion.

***p<0.01 (two-tailed t-test)

Table 2: Description of fields of education and characteristics of the enrolled students in each field.

Field	Subjects within field	Average characteristics of students within fields		Distribution of children of natives across fields		Distribution of children of immigrants across fields	
		Expected earnings	GPA	Number	Percent	Number	Percent
Education	Pre-school-/kindergarten teacher; General-/prim. and lower sec. teacher; Spec, subject and voc. teacher training; Pedagogy; Supplementary education for teachers; Teacher training and pedagogy, other	51.416	0.498	47,086	13.47	1,027	8.82
Law	Law	68.472	0.864	11,417	3.27	503	4.32
Business and administration	Business and administration; Wholesale and retail sales and marketing; Hotel, travel and tourism; Business and administration, other,	67.425	0.487	65,437	18.72	2,740	23.54
Health, lower (BA)	Nursing and caring; Social services; Medicine; Dental health; Therapy; Pharmacy; Veterinary medicine; Sport and physical education; Health, welfare and sport, other	51.238	0.472	65,223	18.66	1,577	13.55
Health professionals (MA +)	Nursing and caring; Social services; Medicine; Dental health; Therapy; Pharmacy; Veterinary medicine; Sport and physical education; Health welfare and sport, other	74.478	1.023	12,761	3.65	1,372	11.79
Science and engineering	Biology; Information and computer technology; Electrical, electronic, mechanical and machine subjects; Natural sciences, voc. and technical subjects, other; Earth sciences; Mathematics and statistics; Building and construction; Manufacturing and extraction; Physics and chemistry	71.122	0.680	63,125	18.06	2,196	18.86
Humanities and arts	Languages; Literature and librarianship; History and philosophy; Religion; Music, dance and drama; Visual art and crafts; Humanities and arts, other	45.128	0.535	33,366	9.54	890	7.65
Social sciences and other	Political science; Sociology; Social geography; Economics; Fisheries and aquaculture; Agriculture; Transport and communications; Safety and security; Other services; Media and information; Psychology; Social anthropology; Social sciences and law, other; Forestry; Primary industries, other; Transport and communications, safety and security and other services, other	59.231	0.558	51,208	14.65	1,336	11.48
Sum				349,623	100 %	11,641	100 %

Note: Statistics are based on the analytical sample as described in Table 1 (analytical sample consists of additional 1,664 individuals enrolled in postsecondary education with unknown field code). GPA shows the average standard deviations from the mean GPA, standardized within birth cohorts. Expected earnings show the average ranked expected earnings.

Figure 1: Distribution of expected earnings percentile rank across fields of study by immigrant background. Within-field variation in expected earnings reflects student sorting by immigrant background across detailed three-digit fields of study within each aggregate field.

Figure 2. Upper panel (a) shows a jittered scatterplot of immigrant parents' education as percentile rank position in the country of origin (vertical axis) and years of education (horizontal axis), averaged over both parents. Lower panel (b) shows the group averages of immigrant parents' educational selectivity relative to the origin country (vertical axis) and years of education relative to native-born parents in Norway (horizontal axis) by country of origin. The circles represent the relative size of each national origin group.

Figure 3: Estimated native–immigrant gaps in probability of enrollment in postsecondary education for all children of immigrants and separately by origin country, from OLS regressions. The vertical line refers to the reference group of children of natives and coefficients for children of immigrants are the estimated gaps relative to natives in each model specification. The baseline model (circles) controls for child sex, birth year, number of siblings, father’s and mother’s birth year, and whether information on only one parent is available. The next three models include these basic adjustments and successively add controls for parental years of education (diamonds), parental educational selectivity (triangles), and grade point average (squares). The 95% confidence intervals are derived from standard errors clustered on the municipality of residence at age 16. Online Appendix E provides the exact estimates and standard errors reported in the figure.

Figure 4. Estimated native–immigrant gaps in probability of enrollment in the postsecondary fields (a) arts and humanities, (b) health, lower (c) education, and (d) social sciences and other miscellaneous fields for all children of immigrants and separately by origin country, from OLS regressions. Only students enrolled in postsecondary education are included in the analysis sample. The vertical line refers to the reference group of children of natives and coefficients for children of immigrants are the estimated gaps relative to natives in each model specification. The baseline model (circles) controls for child sex, birth year, number of siblings, father’s and mother’s birth year, and whether information on only one parent is available. The next three models include these basic adjustments and successively add controls for parental years of education (diamonds), parental educational selectivity (triangles), and grade point average (squares). The 95% confidence intervals are derived from standard errors clustered on the municipality of residence at age 16. Online Appendix G provides the exact estimates and standard errors reported in the figure. Online Appendix H provides results from similar analyses for complete birth cohorts unconditional on enrollment in postsecondary education.

Figure 5: Estimated native–immigrant gaps in probability of enrollment in the postsecondary fields (a) business and administration, (b) law, (c) science and engineering, and (d) health professionals for all children of immigrants and separately by origin country, from OLS regressions. Only students enrolled in postsecondary education are included in the analysis sample. The vertical line refers to the reference group of children of natives and coefficients for children of immigrants are the estimated gaps relative to natives in each model specification. The baseline model (circles) controls for child sex, birth year, number of siblings, father’s and mother’s birth year, and whether information on only one parent is available. The next three models include these basic adjustments and successively add controls for parental years of education (diamonds), parental educational selectivity (triangles), and grade point average (squares). The 95% confidence intervals are derived from standard errors clustered on the municipality of residence at age 16. Online Appendix G provides the exact estimates and standard errors reported in the figure. Online Appendix H provides results from similar analyses for complete birth cohorts unconditional on enrollment in postsecondary education.

Figure 6: Estimated native–immigrant gaps in expected earnings percentile rank for all children of immigrants and separately by origin country, from OLS regressions. Only students enrolled in postsecondary education are included in the analysis sample. The vertical line refers to the reference group of children of natives and coefficients for children of immigrants are the estimated gaps relative to natives in each model specification. The baseline model (circles) controls for child sex, birth year, number of siblings, father’s and mother’s birth year, and whether information on only one parent is available. The next three models include these basic adjustments and successively add controls for parental years of education (diamonds), parental educational selectivity (triangles), and grade point average (squares). The 95% confidence intervals are derived from standard errors clustered on the municipality of residence at age 16. Online Appendix I provides the exact estimates and standard errors reported in the figure. Online Appendix J provides results from similar analyses for completed birth cohorts unconditional on enrollment in postsecondary education.

Horizontal Advantage: Choice of Postsecondary Field of Study among Children of Immigrants

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Are Skeie Hermansen

Supplementary Material

Appendix A: Size of origin groups

Appendix B: Keys used for matching educational levels from registers to educational levels given in the Barro-Lee Educational Attainment Dataset

Appendix C: Explanatory power of parental absolute years of education and parental educational selectivity among children of immigrants

Appendix D: Distributions of immigrant parents' educational selectivity from origin country and in Norway

Appendix E: Exact estimates and standard errors corresponding to Figure 3 in main text

Appendix F: Multinomial logistic regression

Appendix G: Exact estimates and standard errors corresponding to Figure 4 and 5 in main text

Appendix H: Estimated native-immigrant gaps in probability of enrollment in specific post-secondary fields, unconditional on enrollment

Appendix I: Exact estimates and standard errors corresponding to Figure 6 in main text

Appendix J: Estimated native-immigrant gaps in expected earnings percentile rank, unconditional on enrollment to postsecondary education

Appendix A: Size of origin groups

Table A1: Size of groups represented in main analyses, by origin country

Origin country	Observations
Norway	653 675
Pakistan	2 778
Iraq	2 093
Vietnam	2 039
Iran	1 656
Sri Lanka	1 447
Chile	879
Turkey	865
India	699
Other non-Western	5 323
Western	2 220
Total	673 674

Appendix B: Keys used for matching educational levels from registers to educational levels given in the Barro-Lee Educational Attainment Dataset

Table B1: Education levels and years of education according to the Norwegian classifications scheme (NUS2000) and the corresponding levels from the Barro-Lee Educational Attainment dataset.

Norwegian classifications scheme (NUS2000)			Barro-Lee	
Level	Definition	Years	Level	Definition
0	No education	5	1	No education
1	Primary educ. (1.-7.)	6	2	Some primary
2	Lower secondary education (7.-10.)	9	3	Primary completed
3	Upper secondary education (11.-12.)	11	4	Some secondary
4	Upper secondary education, final (13.)	12	5	Secondary completed
5	Postsecondary education, non-tert.	13	6	Some tertiary
6	Tertiary education, short (≤ 4 years)	16	7	Tertiary completed
7	Tertiary education, long (> 4 years)	17	7	Tertiary completed
8	PhD	19	7	Tertiary completed
9	Unknown	.	.	Missing
.	Missing	.	.	Missing

Appendix C: Explanatory power of parental absolute years of education and parental educational selectivity among children of immigrants

Table C1: Explanatory power of parental absolute years of education and parental educational selectivity among children of immigrants obtained from regressing each outcome on parental selectivity and parental years of education.

Children of immigrants	Enrolled in post-secondary	Expected earnings from education	Arts and humanities	Health, lower	Education	Social sciences and other	Business and administration	Law	Science and engineering	Health professionals
Model 1										
Parental selectivity	0.082*** (0.000398)	0.058*** (0.00893)	-0.049*** (0.000141)	-0.046* (0.000254)	-0.036** (0.000138)	-0.001 (0.000174)	0.035** (0.000195)	0.071*** (0.0000834)	-0.043*** (0.000205)	0.084*** (0.000139)
Parental years of education	0.089*** (0.00310)	-0.019 (0.0570)	0.083*** (0.000961)	-0.011 (0.00156)	-0.016 (0.00111)	0.045** (0.00138)	-0.122*** (0.00160)	-0.062*** (0.000724)	0.071*** (0.00228)	0.024 (0.00144)
R^2	0.116	0.050	0.021	0.045	0.030	0.016	0.035	0.024	0.072	0.034
Model 2										
Parental selectivity	0.069*** (0.000278)	0.043* (0.0108)	0.002 (0.000150)	-0.051 (0.000399)	-0.048*** (0.000156)	-0.001 (0.000170)	0.028 (0.000279)	0.032* (0.000117)	0.007 (0.000278)	0.028* (0.000181)
Parental years of education	0.140*** (0.00177)	0.042 (0.113)	0.008 (0.00139)	-0.016 (0.00268)	-0.017 (0.00115)	0.020 (0.00196)	-0.103*** (0.00217)	-0.026 (0.000990)	0.035 (0.00289)	0.117*** (0.00223)
Origin region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.142	0.072	0.030	0.049	0.035	0.022	0.037	0.028	0.082	0.048
N	19999	11689	11689	11689	11689	11689	11689	11689	11689	11689

Note: Estimates are standardized beta coefficients. Standard errors in parentheses, clustered on municipality. All models include dummies for sex, year of birth, birth order, number of siblings, father's and mother's birth year, and whether information on only one parent is available. All outcomes except enrolled in postsecondary are conditioned on enrolling in postsecondary education. Standard errors clustered on residential municipality at age 16 in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix D: Distributions of immigrant parents' educational selectivity from origin country and in Norway

Figure D1: Distributions of immigrant parent's educational selectivity from origin country and in Norway.

Note: Selectivity in Norway is the immigrant's educational rank in Norway, calculated from the Barro-Lee data on educational distributions in Norway. The measure is calculated similarly to educational selectivity in origin country, as described in main text.

Appendix E: Exact estimates and standard errors corresponding to Figure 3 in main text

Table E1: Estimated native–immigrant gaps in probability of enrollment in postsecondary education for all children of immigrants and separately by origin country, from OLS regressions.

	Enrolled in postsecondary			
	1	2	3	4
Children of immigrants	0.0868*** (0.00819)	0.140*** (0.0148)	0.0713*** (0.00957)	0.0976*** (0.00633)
R^2	0.115	0.216	0.217	0.395
Pakistan	0.135*** (0.0102)	0.267*** (0.0102)	0.167*** (0.0144)	0.202*** (0.0135)
Iraq	0.0767*** (0.0129)	0.132*** (0.0139)	0.0629** (0.0221)	0.143*** (0.0151)
Vietnam	0.142*** (0.0201)	0.326*** (0.0207)	0.258*** (0.0298)	0.188*** (0.0223)
Iran	0.127*** (0.0156)	0.158*** (0.0147)	0.104*** (0.0214)	0.137*** (0.0158)
Sri Lanka	0.155*** (0.0149)	0.289*** (0.0209)	0.255*** (0.0186)	0.220*** (0.0152)
Chile	-0.172*** (0.0209)	-0.169*** (0.0204)	-0.198*** (0.0217)	-0.0533** (0.0189)
Turkey	-0.0586* (0.0229)	0.174*** (0.0186)	0.107*** (0.0195)	0.168*** (0.0195)
India	0.207*** (0.0145)	0.202*** (0.0171)	0.143*** (0.0159)	0.152*** (0.0162)
Other Non-Western	0.0962*** (0.0206)	0.0966*** (0.0108)	0.0469* (0.0221)	0.0714*** (0.0127)
Western	0.00940 (0.0204)	-0.104*** (0.0178)	-0.103*** (0.0179)	-0.0693*** (0.00937)
R^2	0.116	0.218	0.219	0.396
Observations	673674	673674	673674	673674
Note: Model specifications as in note to Figure 3 in main text. Standard errors clustered on residential municipality at age 16 in parentheses.				
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.				

Appendix F: Multinomial logistic regression

Model 1 in Table F1 shows results from separate LPM models regressing the effect of being a child of immigrants on the likelihood of enrolling in each of the five fields. Model 2 shows predicted marginal effects from a multinomial logistic regression model regressing the effect of being child of immigrants on the likelihood of enrolling in each of the fields. Both models adjust for grade point average, parental years of education, and parental educational selectivity, as well as a set of background controls. Note that the background controls year of birth, number of siblings, birth order, father's year of birth, and mother's year of birth are included as continuous measures – as opposed to sets of dummies – in order to make the probability functions converge. The models reveal roughly comparable tendencies, indicating that our main conclusions are robust to the choice of model.

Table F1: Estimated native–immigrant gaps in probability of enrollment in postsecondary education for all children of immigrants and separately by origin country using OLS and multinomial logistic regression.

	(1) Linear probability models separate for each field of education	(2) Predicted marginal effects from multinomial logistic regression
Education	-0.0636*** (0.00366)	-0.0643*** (0.00264)
Law	0.0213*** (0.00192)	0.0211*** (0.00268)
Business and administration	0.00273 (0.00422)	0.000873 (0.00420)
Health, lower	-0.0791*** (0.00416)	-0.0800*** (0.00318)
Health professionals	0.109*** (0.00206)	0.127*** (0.00448)
Science and engineering	0.0472*** (0.00413)	0.0387*** (0.00452)
Arts and humanities	-0.0144*** (0.00317)	-0.0155*** (0.00298)
Social sciences and other	-0.0229*** (0.00381)	-0.0278*** (0.00354)
Observations	361264	361264

Note: Column 1 gives estimates from separate linear probability models regressing whether one chooses the given field on whether one is a child of immigrants. Column 2 gives predicted marginal effects from a multinomial logistic regression model, regressing choice of field on whether one is a child of immigrants or not. Science and engineering is set as baseline. The need of a baseline group has resulted in exclusion of 1,664 individuals enrolled in unknown postsecondary fields. Both models include continuous measures for grade point average, year of birth, number of siblings, birth order, father's year of birth, and mother's year of birth, and dummies for sex and whether information on only one parent is available. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix G: Exact estimates and standard errors corresponding to Figure 4 and 5 in main text

Table G1: Estimated native–immigrant gaps in probability of enrollment in the postsecondary fields for all children of immigrants and separately by origin country, from OLS regressions. Conditioning on enrolling in postsecondary education.

	Arts and humanities				Health, lower				Education			
	1	2	3	4	1	2	3	4	1	2	3	4
Children of immigrants	-0.0225*** (0.00438)	-0.0190*** (0.00366)	-0.0142*** (0.00319)	-0.0157*** (0.00322)	-0.0500*** (0.00504)	-0.0683*** (0.00378)	-0.0671*** (0.00424)	-0.0728*** (0.00414)	-0.0481*** (0.00440)	-0.0571*** (0.00306)	-0.0606*** (0.00393)	-0.0635*** (0.00388)
R^2	0.003	0.004	0.004	0.005	0.054	0.063	0.063	0.070	0.022	0.025	0.025	0.027
Pakistan	-0.0598*** (0.00391)	-0.0531*** (0.00453)	-0.0503*** (0.00708)	-0.0525*** (0.00694)	-0.0906*** (0.0124)	-0.130*** (0.00879)	-0.140*** (0.0129)	-0.149*** (0.0127)	-0.0659*** (0.00895)	-0.0852*** (0.00637)	-0.0988*** (0.00735)	-0.103*** (0.00725)
Iraq	-0.0230** (0.00822)	-0.0203* (0.00823)	-0.0184 (0.00943)	-0.0227* (0.00901)	-0.0611*** (0.0103)	-0.0769*** (0.0101)	-0.0839*** (0.0124)	-0.100*** (0.0118)	-0.0220* (0.00946)	-0.0298** (0.00928)	-0.0388*** (0.00959)	-0.0469*** (0.00949)
Vietnam	-0.0488*** (0.00665)	-0.0398*** (0.00656)	-0.0379*** (0.00732)	-0.0363*** (0.00736)	-0.0394*** (0.0113)	-0.0918*** (0.0106)	-0.0992*** (0.0103)	-0.0934*** (0.0105)	-0.0778*** (0.00593)	-0.104*** (0.00630)	-0.113*** (0.00738)	-0.110*** (0.00750)
Iran	-0.00543 (0.00748)	-0.00326 (0.00743)	-0.00178 (0.00694)	-0.00436 (0.00705)	-0.0683*** (0.0115)	-0.0809*** (0.0111)	-0.0866*** (0.0127)	-0.0965*** (0.0126)	-0.0397*** (0.00977)	-0.0459*** (0.00944)	-0.0531*** (0.00980)	-0.0581*** (0.00981)
Sri Lanka	-0.0638*** (0.00323)	-0.0573*** (0.00298)	-0.0563*** (0.00322)	-0.0564*** (0.00323)	-0.0340*** (0.00762)	-0.0720*** (0.00806)	-0.0757*** (0.00764)	-0.0758*** (0.00730)	-0.0474*** (0.00883)	-0.0662*** (0.00803)	-0.0708*** (0.00827)	-0.0709*** (0.00808)
Chile	0.104*** (0.0189)	0.105*** (0.0190)	0.106*** (0.0188)	0.0992*** (0.0186)	0.00397 (0.0217)	-0.00199 (0.0222)	-0.00496 (0.0229)	-0.0305 (0.0225)	0.0203 (0.0211)	0.0174 (0.0212)	0.0135 (0.0213)	0.000736 (0.0215)
Turkey	-0.0288** (0.00971)	-0.0189* (0.00952)	-0.0170 (0.0102)	-0.0217* (0.0103)	-0.0262 (0.0288)	-0.0836** (0.0282)	-0.0907** (0.0283)	-0.108*** (0.0295)	0.0293 (0.0209)	0.000969 (0.0208)	-0.00821 (0.0211)	-0.0171 (0.0208)
India	-0.0599*** (0.00823)	-0.0590*** (0.00808)	-0.0574*** (0.00821)	-0.0581*** (0.00843)	-0.0706*** (0.0113)	-0.0755*** (0.0113)	-0.0818*** (0.0113)	-0.0846*** (0.0111)	-0.0667*** (0.00949)	-0.0691*** (0.00834)	-0.0772*** (0.00880)	-0.0786*** (0.00924)
Other Non-Western	-0.00299 (0.00521)	-0.00219 (0.00504)	-0.000926 (0.00517)	-0.00225 (0.00528)	-0.0452*** (0.0123)	-0.0498*** (0.0104)	-0.0547*** (0.0117)	-0.0598*** (0.0113)	-0.0559*** (0.00715)	-0.0581*** (0.00629)	-0.0644*** (0.00651)	-0.0669*** (0.00635)
Western	0.0233 (0.0119)	0.0187 (0.0118)	0.0186 (0.0117)	0.0178 (0.0116)	-0.0206* (0.0105)	0.00563 (0.0103)	0.00596 (0.0104)	0.00285 (0.0103)	-0.0356*** (0.00946)	-0.0226* (0.00957)	-0.0222* (0.00958)	-0.0238* (0.00951)
R^2	0.004	0.004	0.004	0.005	0.054	0.064	0.064	0.070	0.022	0.025	0.025	0.027
N	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928

Table G1 continued

	Social sciences and other				Business and administration				Law			
	1	2	3	4	1	2	3	4	1	2	3	4
Children of immigrants	-0.0352*** (0.00732)	-0.0318*** (0.00645)	-0.0292*** (0.00635)	-0.0298*** (0.00628)	0.0501*** (0.00617)	0.0419*** (0.00572)	0.00919 (0.00805)	0.00593 (0.00826)	0.0132*** (0.00344)	0.0180*** (0.00471)	0.0194*** (0.00429)	0.0217*** (0.00441)
R ²	0.003	0.004	0.004	0.004	0.009	0.011	0.011	0.014	0.004	0.007	0.007	0.013
Pakistan	-0.0631*** (0.00582)	-0.0563*** (0.00537)	-0.0547*** (0.00653)	-0.0555*** (0.00648)	0.117*** (0.00749)	0.101*** (0.00793)	0.0450*** (0.0131)	0.0402** (0.0134)	0.0539*** (0.00526)	0.0644*** (0.00484)	0.0751*** (0.00558)	0.0785*** (0.00564)
Iraq	-0.0208* (0.00926)	-0.0181 (0.00928)	-0.0170 (0.00943)	-0.0185* (0.00936)	0.0143 (0.0141)	0.00750 (0.0143)	-0.0292 (0.0169)	-0.0386* (0.0178)	0.0256*** (0.00756)	0.0299*** (0.00740)	0.0370*** (0.00751)	0.0436*** (0.00730)
Vietnam	-0.0679*** (0.0123)	-0.0587*** (0.0118)	-0.0576*** (0.0119)	-0.0571*** (0.0120)	0.101*** (0.0159)	0.0790*** (0.0160)	0.0402* (0.0163)	0.0436** (0.0161)	-0.00660 (0.00426)	0.00743 (0.00499)	0.0149** (0.00533)	0.0125* (0.00538)
Iran	0.0129 (0.0132)	0.0151 (0.0131)	0.0159 (0.0131)	0.0150 (0.0130)	0.0356 (0.0202)	0.0302 (0.0206)	0.000543 (0.0216)	-0.00515 (0.0217)	0.0293*** (0.00571)	0.0326*** (0.00599)	0.0384*** (0.00647)	0.0424*** (0.00657)
Sri Lanka	-0.0867*** (0.00552)	-0.0801*** (0.00607)	-0.0795*** (0.00635)	-0.0795*** (0.00640)	0.0166 (0.0115)	0.000338 (0.0117)	-0.0186 (0.0125)	-0.0187 (0.0126)	0.00706 (0.00494)	0.0172** (0.00562)	0.0209*** (0.00581)	0.0210*** (0.00558)
Chile	-0.00350 (0.0235)	-0.00246 (0.0234)	-0.00201 (0.0235)	-0.00436 (0.0232)	-0.00316 (0.0248)	-0.00570 (0.0247)	-0.0213 (0.0253)	-0.0360 (0.0252)	-0.0201*** (0.00569)	-0.0185** (0.00595)	-0.0155* (0.00609)	-0.00505 (0.00682)
Turkey	-0.0205 (0.0146)	-0.0105 (0.0147)	-0.00940 (0.0147)	-0.0110 (0.0146)	0.0800*** (0.0158)	0.0556*** (0.0162)	0.0180 (0.0172)	0.00780 (0.0170)	0.0116 (0.00858)	0.0269** (0.00892)	0.0342*** (0.00908)	0.0414*** (0.00917)
India	-0.0579*** (0.0142)	-0.0571*** (0.0147)	-0.0561*** (0.0148)	-0.0564*** (0.0149)	0.0962*** (0.0172)	0.0941*** (0.0166)	0.0612*** (0.0170)	0.0596*** (0.0174)	0.0143 (0.0122)	0.0156 (0.0115)	0.0219 (0.0112)	0.0231* (0.0114)
Other Non-Western	-0.0201** (0.00766)	-0.0193** (0.00740)	-0.0185* (0.00780)	-0.0190* (0.00778)	0.0496*** (0.00857)	0.0477*** (0.00921)	0.0222 (0.0126)	0.0193 (0.0130)	0.00678 (0.00398)	0.00802 (0.00451)	0.0129* (0.00511)	0.0150** (0.00532)
Western	-0.00362 (0.0107)	-0.00820 (0.0108)	-0.00825 (0.0108)	-0.00854 (0.0108)	-0.0361*** (0.0104)	-0.0249* (0.0100)	-0.0231* (0.0100)	-0.0249* (0.0102)	-0.0143*** (0.00379)	-0.0213*** (0.00389)	-0.0216*** (0.00388)	-0.0204*** (0.00397)
	0.003	0.004	0.004	0.004	0.009	0.011	0.011	0.014	0.005	0.008	0.008	0.013
N	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928	362928

Table G1 continued

	Science and engineering				Health professionals			
	1	2	3	4	1	2	3	4
Children of immigrants	0.00593 (0.00568)	0.0210*** (0.00405)	0.0349*** (0.00634)	0.0421*** (0.00613)	0.0873*** (0.00440)	0.0963*** (0.00568)	0.108*** (0.00599)	0.113*** (0.00625)
R^2	0.072	0.078	0.079	0.090	0.011	0.020	0.021	0.038
Pakistan	-0.0494*** (0.00669)	-0.0174** (0.00566)	0.00760 (0.0124)	0.0182 (0.0121)	0.157*** (0.0120)	0.177*** (0.0100)	0.215*** (0.00979)	0.222*** (0.00935)
Iraq	-0.000262 (0.0152)	0.0127 (0.0157)	0.0292 (0.0188)	0.0496** (0.0175)	0.0902*** (0.0115)	0.0981*** (0.0114)	0.124*** (0.0120)	0.136*** (0.0130)
Vietnam	0.0614*** (0.0145)	0.104*** (0.0142)	0.122*** (0.0154)	0.114*** (0.0154)	0.0765*** (0.00913)	0.103*** (0.00866)	0.130*** (0.00873)	0.125*** (0.00878)
Iran	-0.0454** (0.0154)	-0.0351* (0.0161)	-0.0217 (0.0154)	-0.00928 (0.0155)	0.0820*** (0.0145)	0.0883*** (0.0142)	0.109*** (0.0147)	0.117*** (0.0145)
Sri Lanka	0.0610*** (0.00906)	0.0921*** (0.0103)	0.101*** (0.0110)	0.101*** (0.0101)	0.150*** (0.0137)	0.169*** (0.0124)	0.182*** (0.0129)	0.183*** (0.0134)
Chile	-0.0873*** (0.0131)	-0.0824*** (0.0132)	-0.0754*** (0.0128)	-0.0432*** (0.0123)	-0.0130 (0.0102)	-0.01000 (0.00998)	0.000840 (0.0106)	0.0211* (0.00948)
Turkey	-0.0595*** (0.0149)	-0.0125 (0.0126)	0.00439 (0.0126)	0.0267* (0.0126)	0.0162 (0.00858)	0.0450*** (0.00946)	0.0712*** (0.0106)	0.0852*** (0.0119)
India	-0.0363* (0.0159)	-0.0322 (0.0176)	-0.0174 (0.0170)	-0.0139 (0.0168)	0.182*** (0.0274)	0.184*** (0.0260)	0.207*** (0.0255)	0.209*** (0.0265)
Other Non-Western	0.0150* (0.00675)	0.0188** (0.00662)	0.0302*** (0.00849)	0.0366*** (0.00843)	0.0545*** (0.00697)	0.0568*** (0.00609)	0.0745*** (0.00534)	0.0786*** (0.00527)
Western	0.0580*** (0.0131)	0.0365** (0.0129)	0.0358** (0.0128)	0.0397** (0.0128)	0.0269** (0.0101)	0.0137 (0.00987)	0.0125 (0.00986)	0.0150 (0.00963)
R^2	0.072	0.079	0.079	0.090	0.014	0.023	0.024	0.042
N	362928	362928	362928	362928	362928	362928	362928	362928

Note: Model specifications as in note to Figure 4 and 5 in main text. Standard errors clustered on residential municipality at age 16 in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix H: Estimated native–immigrant gaps in probability of enrollment in specific postsecondary fields, unconditional on enrollment

Figure H1: Estimated native–immigrant gaps in probability of enrollment in the postsecondary fields (a) arts and humanities, (b) health, lower (c) education, and (d) social sciences and other miscellaneous fields for all children of immigrants and separately by origin country, from OLS regressions. Model specifications as explained in note to Figure 4 in main text. 95 % confidence intervals based on standard errors clustered on residential municipality at age 16.

Figure H2: Estimated native-immigrant gaps in probability of enrollment in the postsecondary fields (a) business and administration, (b) law, (c) science and engineering, and (d) health professionals for all children of immigrants and separately by origin country, from OLS regressions. Model specifications as explained in note to Figure 5 in main text. 95 % confidence intervals based on standard errors clustered on residential municipality at age 16.

Appendix I: Exact estimates and standard errors corresponding to Figure 6 in main text

Table II: Estimated native–immigrant gaps in expected earnings percentile rank for all children of immigrants and separately by origin country, from OLS regressions. Only students enrolled in postsecondary education are included in the analysis sample.

	1	2	3	4
Children of immigrants	1.719*** (0.213)	2.343*** (0.304)	2.215*** (0.227)	2.653*** (0.230)
R^2	0.061	0.070	0.070	0.105
Pakistan	4.018*** (0.325)	5.379*** (0.273)	5.857*** (0.332)	6.507*** (0.307)
Iraq	1.352** (0.411)	1.903*** (0.415)	2.219*** (0.464)	3.466*** (0.415)
Vietnam	3.672*** (0.477)	5.494*** (0.451)	5.828*** (0.408)	5.377*** (0.445)
Iran	-0.226 (0.411)	0.212 (0.403)	0.467 (0.434)	1.228** (0.406)
Sri Lanka	4.287*** (0.416)	5.610*** (0.330)	5.774*** (0.347)	5.784*** (0.355)
Chile	-5.836*** (0.620)	-5.629*** (0.612)	-5.494*** (0.621)	-3.528*** (0.555)
Turkey	-0.488 (0.594)	1.507** (0.521)	1.831*** (0.474)	3.194*** (0.469)
India	4.666*** (0.540)	4.838*** (0.461)	5.121*** (0.521)	5.333*** (0.621)
Other Non-Western	1.234*** (0.369)	1.396*** (0.305)	1.615*** (0.337)	2.006*** (0.305)
Western	-1.565** (0.536)	-2.478*** (0.524)	-2.493*** (0.523)	-2.252*** (0.489)
R^2	0.062	0.072	0.072	0.106
Observations	362928	362928	362928	362928

Note: Model specifications as in note to Figure 6 in main text. Standard errors clustered on residential municipality at age 16 in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix J: Estimated native–immigrant gaps in expected earnings percentile rank, unconditional on enrollment to postsecondary education

Figure J1: Estimated native–immigrant gaps in expected earnings percentile rank for all children of im-migrants and separately by origin country, from OLS regressions. Unconditional on enrollment to postsecondary education.

Note: Model specifications as explained in note to Figure 6 in main text. For those who were not enrolled in postsecondary education, expected earnings are based on the earnings rank of persons in the older cohorts who did not have degrees from the postsecondary level (i.e., they had a degree from upper-secondary education or had not completed upper secondary). 95 % confidence intervals based on standard errors clustered on residential municipality at age 16.