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EXPLORING THE LINK BETWEEN IMMIGRANT SELECTIVITY AND ECONOMIC OUTCOMES: A STUDY OF EDUCATIONAL SELECTIVITY AND LABOR MARKET PERFORMANCE IN THE UK

Renee Reichl Luthra and Lucinda Platt

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Abstract

This study examines the relationship between immigrant selectivity and labor market outcomes, focusing on the educational selectivity of immigrants in the United Kingdom. While previous research has suggested that immigrant selectivity plays a role in determining economic outcomes and intergenerational mobility, there is limited evidence on the extent of selectivity and its consequences for immigrants' labor market outcomes. This study aims to fill this gap by providing a comprehensive assessment of the causal pathway between selectivity and economic outcomes.

Using nationally representative data from the Understanding Society survey, the study explores the association between educational selectivity and various labor market indicators. The analysis reveals that, on average, immigrants in the UK have higher levels of qualifications compared to non-migrants from their countries of origin. However, the study finds limited evidence of a positive relationship between educational selectivity and labor market outcomes beyond absolute levels of qualifications. Instead, selectivity is negatively associated with employment and wages for both male and female immigrants.

To better understand these findings, the study investigates the mechanisms through which selectivity may influence economic outcomes, including immigrants' mental and physical health, social capital, and cognitive and non-cognitive skills. However, the study finds no positive association between selectivity and these mechanisms for either male or female immigrants.

The study contributes to the literature by providing new empirical evidence on the consequences of immigrant selectivity in a high migration context. Unlike previous studies, this research directly measures the mechanisms linking selectivity and economic outcomes, rather than relying solely on theoretical propositions. The findings suggest a break in the expected causal pathway between selectivity and

labor market outcomes, highlighting the need for a deeper understanding of the factors driving immigrant economic success.

Introduction

Much of the literature documenting inequality in the economic outcomes and intergenerational mobility of the foreign born suggests that some variation can be explained by immigrant selectivity: that is, the degree to which migrants are non-randomly selected from the sending country population. While the relevance of immigrant selection receives increasing attention in the sociological literature, with findings of a relationship between the degree of immigrant selectivity and their children's aspirations and educational choices, we still lack evidence on the extent of selection for many countries, and on its consequences for immigrants' own labour market outcomes (Feliciano 2020). Most empirical assessments focus on selection on one characteristic – educational attainment – and find that immigrants rank above average compared to non-migrants in their countries of origin, but that there is variation in the degree of selection. Such variation in selection is assumed to be key to understanding differences in immigrant outcomes, as selection on observed and unobserved characteristics are expected to be positively related. Immigrants with higher relative levels of educational attainment are expected to have better health, cognitive and non-cognitive skills, and stronger social and cultural capital (encompassing higher expectations for their children) than their less-selected counterparts. In turn, these associations should drive better economic outcomes for both immigrants and their children.

While there is evidence for some of these relationships, for example, Ichou and Wallace (2019) charted the relationship between educational and health selection, and Engzell (2019) linked educational selection of parents to more ambitious educational choices for their children, typically the mechanisms linking observed selection and economic outcomes are inferred rather than directly measured (Brunori et al. 2020; Ichou 2014; Schmidt et al. 2021).

To assess the complete causal pathway between selectivity and economic outcomes, we need a single study that measures selectivity on educational attainment, tests for an association between differential selectivity and economic outcomes, and further demonstrates the mechanisms, i.e., those typically unobserved correlates of educational selection, through which an association is expected to operate.

We use a unique, nationally representative data source for the United Kingdom, Understanding Society, to provide this assessment. Understanding Society contains extensive indicators of labour market relevant characteristics that are usually unobserved in large-scale studies covering immigrants. These include cognitive and non-cognitive skills, social networks, and health (Platt et al., 2020). Much of the literature which finds a positive association between immigrant selectivity and immigrants' own outcomes has focused on the United States (Feliciano 2020; Hamilton 2020; Zhou and Lee 2017). More recent work focusing on the European case (Schmidt et al., 2021) as well as on Italy (Brunori et al., 2020), has failed to find a positive association between immigrant selectivity and employment, with only localised evidence of a positive association with occupational status.

Evidence from the UK case speaks to both literatures. Like the US, the UK is a top English-speaking destination country for potential migrants from all over the world (United Nations, 2019), and it shares with the US a relatively flexible labour market and Anglo-liberal welfare state (Esping-Andersen and Gosta, 1990). At the same time, with its extensive colonial history and (until 2021) participation in free movement in the European Union, the UK encompasses a wide range of migration policy regimes similar to other major receiving societies in Europe. Following a relatively open policy towards former colonies, and free movement from the EU, the

UK currently maintains an increasingly restrictive stance towards migration, an immigration policy regime that now characterises many western immigrant-receiving countries (Helbling and Kalkum 2018).

Our analysis begins by demonstrating that, on average, immigrants to the UK have higher levels of qualifications than non-migrants of the same age and sex in their country of origin, but with substantial variation in selectivity both within and across cohorts. However, in contrast to the selectivity hypothesis, we observe limited evidence of a positive relationship between the degree of immigrants' educational selectivity and their labour market outcomes over and above absolute levels of qualifications. Rather, consistent with the findings of Brunori et al. (2020) and Schmidt et al. (2021) selectivity is negatively associated with employment for both foreign-born men and women. We further document that it is negatively associated with the wages of the foreign-born. Testing for heterogeneity across subpopulations and for multiple labour market outcomes reveals only two positive associations with educational selectivity: the wages of those with a tertiary degree, and the probability of being in a professional occupation for women.

To better understand these findings, we examine the association between educational selectivity and those mechanisms theorised to link selectivity with better economic outcomes, specifically, immigrants' mental and physical health, social capital, and cognitive and non-cognitive skills. As we show, and consistent with the broader labour market literature, these mechanisms are themselves independently associated with labour market performance. However, they are not positively associated with immigrant selectivity for either foreignborn men or women. Our paper thus demonstrates a break in the expected causal pathway between selectivity and labour market outcomes, which is consistent with the limited findings of a positive relationship between the two. We show that this lack of an association largely holds across subpopulations defined by migration policy regime, the level of development of the sending country, between those with a tertiary degree and those with lower levels of education, or between those who obtained their degree abroad as opposed to in the UK. Our contribution is thus not only to provide new findings on the consequences of migrant selectivity in a theoretically relevant, high-migration context, but to be able to directly account for what is driving our results, rather than to infer the mechanisms solely with reference to theoretical propositions, as has typically been the case to-date. In our conclusion we reflect on the implications of our findings.

1. Background and theory

1.1. The selectivity hypothesis

Underlying the attention to migrant selectivity is the acknowledgment that migration imposes costs: financial, physical, and psychological. For migration to be both an achievable and a rewarding strategy, migrants are therefore assumed to be selected – to a greater or lesser extent – on demographic, personal and socioeconomic factors that enable them to migrate successfully, and which are, in turn, positively associated with labour market performance.

Studies comparing migrants to non-migrants in their origin countries find that they have higher levels of educational attainment than their non-migrant counterparts (Belot and Hatton 2012; Feliciano 2005; Sporlein et al., 2020¨). The selectivity hypothesis assumes that the degree of selection on an observed characteristic, such as educational attainment, will be associated with positive selection on other (often unobserved) traits. Migration scholars assume that immigrant educational selectivity is associated with social capital (Zhou and Lee 2017), expectations for treatment (Engzell and Ichou 2019), and cognitive and non-cognitive skills (Chiquiar and Hanson 2005). This hypothesis mirrors an (often implicit) assumption in sociological research on labour market inequalities in general: when scholars "control" for educational attainment, this variable is intended not only to represent raw human capital, but also serves as a positional good that proxies for a host of other characteristics including social networks, non-cognitive skills, health and family background (Hollis 1987;

Luthra et al., 2015). The assumption is that it is not only the absolute amount of educational attainment that is associated with these generally unobserved characteristics, but the relative position one has attained: location at the top, middle, or bottom of the educational distribution in one's society should correlate with location at the top, middle, or bottom of the distribution on other characteristics. Yet, with the exception of a few papers linking, for instance, educational selectivity to social networks (Nygård 2021) and to aspirations for children (Engzell 2019), the mechanism connecting observed and unobserved relative position is typically inferred rather than directly measured in quantitative research.

Finally, the selectivity hypothesis assumes that the positive correlation between observed educational rank and relative position in terms of habitus, skills, and other usually unobserved distributions expected in the sending country population will underlie a positive association between educational selectivity and labour market outcomes for immigrants. For these mechanisms to drive better labour market outcomes in the country of destination among those more educationally selected two conditions must hold. First, these typically unobserved characteristics must be positively rewarded in the labour market for immigrants. And second, the positive association between observed and unobserved relative position in the sending country must hold among those who immigrate into that context. The first assumption is directly testable with destination country data. The second assumption requires a comparison of the association between unobserved and observed traits in both sending and receiving countries – an analysis that, to the best of our knowledge, is not yet possible due to a lack of internationally comparable data.

Fig. 1 illustrates the selectivity hypothesis, showing the implications when we attempt to adjust for differences between immigrants of varying origins with a single measure of absolute education. In the first stylized example of the educational distribution from country A, an immigrant with a lower secondary degree is positively selected, given the small shares of those with upper secondary and tertiary qualifications. We expect such an immigrant to be above average on other labour market relevant characteristics including cognitive and non-cognitive skills, social networks, and mental and physical health. In country B, where educational expansion at the upper secondary level is greater, a lower secondary degree implies a median position: this immigrant is both more and less educated than a comparable share of the sending country population, and thus we expect them to be somewhat "average" on other characteristics. Finally, in country C, which might represent many advanced economies, relatively few residents leave school before the age of 18 and thus an immigrant from C with only a lower secondary credential would be negatively selected, with more limited social networks, skills, and worse health.

The key empirical consequence of the hypothesis that relative position in education is associated with other labour-market relevant characteristics, which in turn drives better labour market outcomes, is that to properly account for migrants' labour market outcomes, we need to control not only for the absolute level of a characteristic of interest – in our example having a lower secondary degree – but also the degree of selection implied by that level. Such selection clearly differs by sending country, birth cohort, and sex.

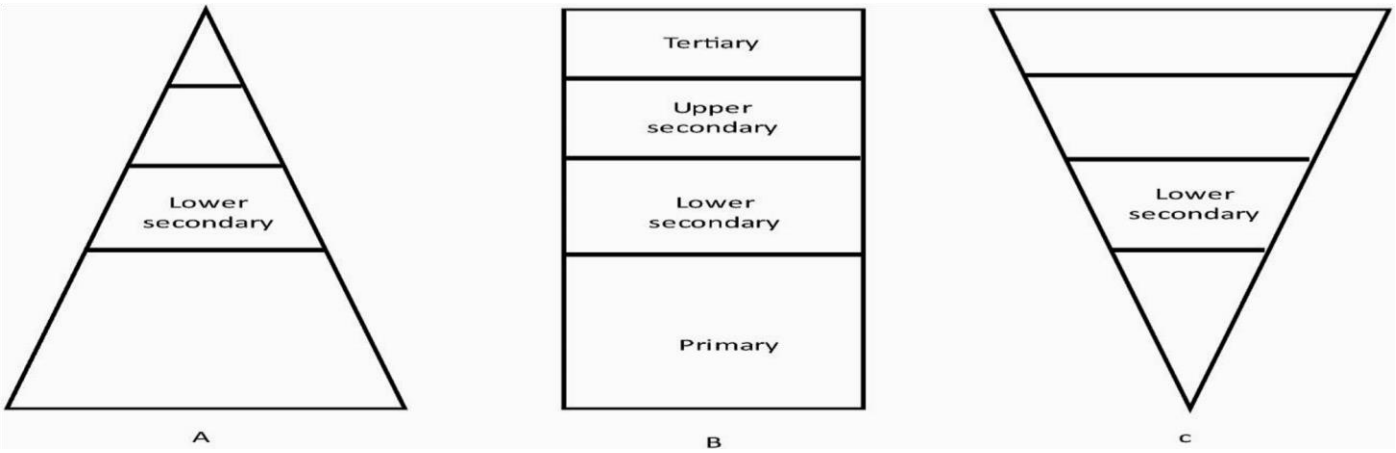

Fig. 1. Thematic sketch of relationship between absolute education and educational selection.

1.2. Empirical evidence

Three overlapping bodies of work address the selectivity hypothesis empirically: those that measure immigrant selection, those that imply or demonstrate an association between selection and labour market outcomes, and those that examine the association between selection and labour market relevant characteristics. We cover each of these in turn.

A body of older empirical work in economics comparing the wages of immigrants from different national origin contexts argued that variation in the labour market performance of immigrant men (Borjas, 1987) and women (Cobb-Clark 1993) could be explained by variation in selection on unobservables (Roy 1951) for immigrants from countries with higher and lower returns to education. Some of the first direct assessments of selectivity examined immigrants from Mexico to the United States and demonstrated that immigrants tended to be drawn from the middle to upper end of the Mexican educational and wage distribution (Chiquiar and Hanson 2005). Research extending this work to cover a larger number of sending countries to the United States (Feliciano 2005) and to receiving countries across the OECD (Belot and Hatton 2012), consistently identified positive selection on educational attainment among migrants, which, however, differed by origin and destination country.

Although we have robust and consistent evidence of positive immigrant selection on educational attainment, most of the studies which argue for the importance of selection in determining immigrant labour market success "provide suggestive, rather than direct, evidence of selection effects" (Feliciano 2020:25.10). For instance, recent scholarship shows that Black immigrants to the US, from various sending world regions and countries, demonstrate earnings trajectories that are more like Black internal migrants than Black internal stayers, suggesting positive selection among movers (Hamilton 2014, 2015). Yet this work does not include any direct measure of selectivity at the individual level to enable the comparison of wages of more and less positively selected immigrants. Two other examples are found in comparisons of the labour market success of Jewish immigrants to Israel and the United States (Yinon Cohen et al., 2007) and Argentinian and Chilean immigrants to Sweden, the United States, and Israel (Birgier et al., 2018): although both papers document that more positive educational selection at the receiving country level is associated with more positive earnings assimilation, the authors do not examine the association between the two at the micro-level. Two recent papers identify a positive association between migrant educational selectivity and occupational attainment: in Europe among the more positively selected, and in Italy among those with a tertiary degree, respectively, (Brunori et al., 2020; Schmidt et al., 2021); but they also document a negative association with employment. Importantly, they can only infer the mechanisms driving both associations.

Empirical evidence linking educational selection to labour market relevant mechanisms is sparse, and results are not wholly consistent with the selectivity hypothesis. For example, Sporlein and Kristen (2019) ¨ studied the relationship between educational selection and destination country language ability and found that positively selected immigrants to Europe did not have better receiving country language skills upon arrival, though they acquired language skills more rapidly than less selected migrants. Ichou and Wallace (2019) identified a positive association between educational selection and health. Polavieja et al. (2018) compared achievement-related motivational orientations among immigrants to Europe and non-migrants in the sending country. They found no evidence of positive selection, though they did not examine the association of these orientations with educational selectivity. Ifatunji (2017) examined whether the labour market advantages of Afro-Caribbean immigrants in the US could be explained by more favourable soft-skills, and found instead that immigrants showed lower levels of self-mastery than African Americans. She did not, however, examine selectivity directly by comparing immigrants to non-migrants in the countries of origin.

In sum, research on selection and the labour market provides strong evidence that immigrants tend to be positively selected on education, more equivocal evidence of the economic returns to this selection, and limited, and somewhat contradictory, exploration of the mechanisms which might underlie any such returns.

1.3. Selection and labour market mechanisms in the UK

This paper contributes to these three strands of previous research. We first test whether immigrants to the UK are positively selected on educational attainment. We then assess whether this selectivity brings labour market returns, over and above controls for absolute education. Finally, although we cannot evaluate whether there is a positive association between rank position in the educational distribution and typically unobserved characteristics for each sending country of origin, we can use our UK data to investigate if frequently theorised relationships between educational selectivity and labour market mechanisms hold for immigrants. To motivate our analysis and choice of mechanisms we outline previous research on these relationships below.

First, those more selected are assumed to have a social status in line with their position in the educational hierarchy of their country of origin (Feliciano 2020). This privileged status in the sending country then brings social and cultural capital that can act as resources following migration. While this link has been proposed and partially supported for second generation educational attainment (Nygård 2021), the evidence for immigrants' labour market outcomes is less clear. In terms of social capital, researchers document the existence of a transnational capitalist class (Beaverstock 2005; Sklair 2001) linked by social networks of privileged members that lead to the highest levels of economic success in receiving country labour markets. We might expect the most positively selected to comprise such an elite social class. At the same time, embeddedness in local, coethnic and family-based communities can bring limitations on economic success as well as opportunities. For example, the literature on ethnic enclaves and job-referral networks comes to mixed conclusions about the value of social networks comprised primarily of co-ethnics (e.g. Xie and Gough 2011; Borjas, 1992; Dustmann et al., 2016). Indeed, what is crucial is likely to be the socioeconomic composition of the local network, whether it provides 'bridges' into the labour market or not (Lin 2001), and the differential consequences for men and women according to whether gendered expectations about women's labour market participation prevail (Zuccotti and Platt, 2017).

Second, more educationally selected migrants are expected to be advantaged in terms of the cognitive and non-cognitive skills that have fostered their higher rank position. Both cognitive and non-cognitive skills are socially patterned (Anger 2012; Marks 2021) and have further been shown to enhance labour market outcomes over and above educational attainment (Heckman 2006; Heckman et al. 2006). Cognitive skills captured by standardised assessments are associated with wage gains across the life course (Lin et al. 2018). While cognitive skills promote educational attainment, the additional skills needed to achieve relatively uncommon qualifications for

a given origin country, means that we would expect those who are more highly selected to have higher cognitive skills, even conditioning on level of education.

'Non-cognitive skills' encompass a range of characteristics including motivation, perseverance and selfcontrol (Gutman and Schoon 2016), and can also be conceptualised as personality traits, including the "Big 5" of openness, extraversion, neuroticism, conscientiousness and agreeableness (Brunello and Schlotter 2011; Palczynska and ´ Swist 2018´). Traits such as openness and extraversion have been associated with wage premia, while agreeableness and neuroticism have been associated with penalties in the labour market (Collischon 2020; Nandi and Nicoletti 2014; Palczynska and ´ Swist 2018´). We would expect non-cognitive skills to be positively associated with selection because, like cognitive skills, they should be particularly necessary to obtain higher relative levels of education.

Finally, we might anticipate that migrants are selected in their health in general (Hamilton 2015; Riosmena et al. 2017), but also that those who are more educationally selected should be more positively selected on health. The relationship between health and educational attainment emerges at a very young age and through this pathway explains some of the association between health and labour market success (Case and Paxson 2010; Jackson 2015). Longitudinal studies demonstrate a direct effect between adolescent physical health and schooling but also show mediation through psychosocial and mental health (Haas and Fosse 2008), meaning that we would expect a positive association between educational selection and both mental and physical health. In terms of empirical evidence, Ichou and Wallace (2019) have demonstrated for France that educational selectivity and health selection are indeed associated.

While much of the extant literature assumes that the relationship between observed selection and receiving country labour market outcomes can be attributed to one or more of these mechanisms, there is currently no study that empirically evaluates them all. We draw on the range of measures uniquely available in our data to examine whether there is a link between educational selection and relevant indicators of each pathway, specifically a) social networks, b) cognitive skills, c) non-cognitive skills, and d) mental and physical health. We recognise that this list of potential mechanisms is not exhaustive, but it is the most comprehensive test to date and uses all the data that we have at our disposal.

1.4. Heterogeneity in the selection-mechanisms link

Even if the relationship between educational selection and other positive characteristics is not observed across the immigrant population as a whole, it is possible that this disguises different patterns across subpopulations where the link among those who immigrate is stronger or weaker. Other researchers have, for example, documented heterogeneity in the association between immigrant selectivity and labour market outcomes (Brunori et al., 2020) and second generation educational attainment (Ichou 2014) according to the level of absolute education attained. Moreover, the fact that empirical assessments of the selectivity hypothesis reach different conclusions across time and space suggests that results may differ depending on the composition of immigrants or the migration policy facing them at the time of their arrival. The UK foreign born population is notable for its relatively high levels of educational attainment (Dustmann et al., 2022), for its diversity, with large flows of immigrants from a range of low-, middle- and higher-income countries, and for the different policy regimes experienced by immigrants, over time and from different origin countries.

We therefore conduct a series of sensitivity tests, modelling the relationship between educational selectivity and labour market outcomes and mechanisms separately for immigrants with tertiary and lower levels of education, from more and less developed countries, for those experiencing free movement vs immigration control, and for those who completed their degree in the UK vs those who finished education abroad.

2. Data and measures

2.1. Data

Our study uses Understanding Society: the UK Household Longitudinal Study (University of EssexInstitute for Social and Economic Research, 2018), a large, nationally representative panel study that started in 2009/10. The study comprises a general population sample, supplemented by an ethnic minority boost. As a result, the study provides excellent coverage of the wide range of sending countries, arrival cohorts, and migration regimes in the UK. These country-cohorts differ in their absolute levels of qualifications and in degree of educational selection, offering the heterogeneity necessary to evaluate educational selection and its consequences.

We use data from the third wave of Understanding Society (2011/12). This is the only wave which contains measures of all the mechanisms we hypothesize link educational selection and labour market outcomes. Our sample is restricted to adults aged 25–65 who immigrated after age 18 and are not in full-time education. Within this sample, rates of missingness across our variables range from 5% to 13%, except for the personality measures, which were captured using a self-completion module with a 9 percentage point lower response rate than the main individual interview response rate of 79% in wave 3 (Institute for Social and Economic Research, 2021; Scott and Jessop, 2013),[1] and are missing for 28% of our analytic sample. We therefore created 20 imputed datasets using multiple imputation with chained equations (White et al. 2011), separately for men and women. We analyse men and women separately given the differences in educational attainment and selectivity across the origin countries in our sample as well as the gendered nature of employment outcomes. Our complete analytical sample size is 2735 immigrants deriving from 107 origin countries. [2] Since Understanding Society is a complex stratified survey, we include design weights and account for sampling strata at both the imputation and estimation stages of our analysis. Weighted regression models designed for use with multiple imputed data are used in all analysis employing the [MI] suite in Stata 15.

We merge these data with information from the current version of the Barro and Lee (2013) dataset, which provides international data on educational attainment distributions from 1950 to 2010 in 146 countries. Compiling data from UNESCO, Eurostat, and censuses and population surveys from around the world, the Barro-Lee dataset contains the distribution of educational attainment in the adult population by sex and fiveyear age group in seven categories (no formal education, incomplete primary, complete primary, lower secondary, upper secondary, incomplete tertiary and completed tertiary education). To compute educational selectivity for the foreign-born respondents in our sample, we use distributions from the 2010 observation year to match the year educational qualifications were initially collected for our Understanding Society sample.

2.2. **Measures**

2.2.1. **Educational selection**

Educational selection is measured following the procedure described in Ichou (2014). We first use information on certification and school leaving age to code our sample of immigrants' educational attainment into the seven Barro-Lee categories. Next, we match each immigrant in Understanding Society with the distribution of educational attainment of individuals of the same sex, country of birth, and five-year age group. We then compute the percentage of people of the same country of origin, sex, and age group who have a lower level of educational attainment, plus half the percentage of people with the same level of education. This measure potentially runs from 0 to 100 and can be interpreted as an immigrant's position in the sending country educational distribution, with higher scores indicating more positive selection.

2.2.2. **Labour market variables**

[1] The longitudinal individual response rate is computed as the proportion of individuals with a full interview at wave 2 who provided a full interview in wave 3. The cross-sectional individual response rate, computed as the proportion full interviews achieved from the total individuals assigned to fieldwork in wave 3, is 61%. The household cross-sectional response rate, computed as the proportion of households assigned to fieldwork in wave 3 with a partial or full response, is 76%.

[2] A list of the countries and sample numbers is found in the Appendix Table A1.

To establish whether educational selection is associated with labour market success, we use three measures: Employed: whether the individual was in work the previous week (1), versus being out of the labour market or unemployed (0). Logged Monthly Earnings: restricted to those with positive monthly earnings, logged to approximate a normal distribution.

Professional/managerial occupation: restricted to those currently in work. We construct a dichotomous variable that takes the value of 1 if current job held was at levels 1–2 of the eight-category National Statistics Socio-economic Classification (NS–SeC): an employer in a large establishment, higher managerial, and lower management and professional occupations.

2.2.3. **Selection mechanisms**

The primary goal of this paper is to assess whether educational selectivity is associated with labour market relevant mechanisms: social capital, cognitive and non-cognitive skills, and mental and physical health.

3.2.3.1. **Social networks and social capital**. We operationalise social capital as the composition of the individuals' friendship networks. Respondents are asked what share of their friends are of the same race or ethnicity, have a job, live in the local area, are family members. Given existing discussion on the relative economic merits of "bridging" and "bonding" social capital (Lin 2001), we expect share of friends of the same race, area or family to be negatively associated with selection and labour market outcomes and the share employed to be positively associated with both. We dichotomise the response categories to distinguish between all or more than half having the characteristic (coded 1) compared to about half or less than half (0).

2.2.3.2. **Cognitive and non-cognitive skills**

3.2.3.2.1. **Cognitive skills.** We use two cognitive skills measures gathered from all adult respondents. Both were chosen based on previous studies which demonstrate that these short tests are sufficiently correlated with more comprehensive tests of cognitive ability (Lang et al., 2007). Both measures were also tested to ensure that they could be implemented with speakers whose first language was not English (McFall 2013). The first measure is a test of semantic and category verbal fluency. Respondents were asked to list as many animals as they could in a period of 60 s starting from the first animal. This variable counts how many genuine, nonduplicate animals the respondent listed, with a range from 0 to 41. The second measure tests practical, numerical problem solving. Respondents were presented with four problems to solve. Respondents who correctly answered all four were presented with a further problem. This measure is a simple count of the number of problems solved correctly, ranging from 0 to 5.

3.2.3.2.2. **Non-cognitive skills.** As discussed, the generic term of non-cognitive skills contains a range of personality characteristics understood to be associated with favourable labour market outcomes net of realised educational attainment (Gutman and Schoon 2016; Heckman and Rubinstein 2001). Understanding Society collects the short form of the Big 5 Personality inventory (John and Srivistava, 1999; Gerlitz and Schupp 2005), which measures conscientiousness, agreeableness, openness to experience, neuroticism, and extraversion, with a set of 3 questions for each trait and responses on a scale from 1 to 7. The Big 5 is a wellvalidated measure of non-cognitive skills that is widely used across the social sciences to investigate socioeconomic outcomes (Jackson and Forthcoming, 2023). These personality traits can be conceived as skills or behaviours which can be taught (Carneiro et al. 2007), and include those both negatively (e.g. neuroticism) and positively (e.g. extraversion) associated with labour market outcomes (Gelissen and de Graaf 2006; Nandi and Nicoletti 2014).

3.2.3.3. **Mental and physical health.** We measured mental health by the 12-item General Health Questionnaire (GHQ) module (Goldberg et al., 1997). This is a measure of psychological distress incorporating both anxiety and depression. The Likert-type responses are recoded so that higher scores indicate poorer mental health, and then summed, with a maximum score of 36. Since its introduction in 1978, the GHQ has been widely tested for

validity and reliability (Jackson 2007), including for inter-ethnic comparisons specifically with Understanding Society (King et al., 2021).

We measure physical health with the general self-rated health question 'In general, would you say your health is … excellent, very good, good, fair or poor?'. Again, a higher score indicates poorer health. This is a well validated and widely used measure with a strong correlation with mortality, even in models with socioeconomic controls (DeSalvo et al., 2006). While its comparability across samples from different countries has been questioned due to potential reporting differences, it has featured in studies of immigrant selection in different contexts (e.g. Hamilton 2015; Ichou and Wallace 2019) and is associated with better economic outcomes among immigrants as among native born populations. Given we additionally control for region of origin, we would consider this the most suitable and internationally comparable measure available to us.

2.2.4. **Heterogeneity in the selection-mechanism association**

Given the diversity in our sample in terms of sending country development, educational attainment, and migration regime, we carry out several tests for heterogeneity in the association between educational selection and the respective mechanisms. The degree to which educational selectivity is associated with the cognitive and non-cognitive skills, social networks, and health of immigrants in any receiving country context will be, in part, a function of the stratification system of the sending country, since this will influence which characteristics are associated with educational selection, as well as the ease of migration to the specific receiving country, since this determines how strongly immigrants are "selected" within sending country strata. For example, strong selection on the tertiary educated due to work visa restrictions in the receiving country or an educational system where access is predicated on ability to pay rather than educational performance is likely to alter the association between educational selectivity and labour market mechanisms. While we do not have space to elaborate the different implications of such institutional differences at origin and destination, we acknowledge the diversity of our sample by testing for heterogeneity across four key characteristics, which are consequential for labour market outcomes and which may also moderate the selectivity – mechanism links: sending country development, high vs lower educational attainment, location of qualification, and migration regime.

To avoid co-linearity with educational selection, moderation by sending country development is assessed by comparing those from advanced economies according to the Barro-Lee dataset for the period of migration vs all others (see Appendix table A1). Given that those from countries with lower level of development typically face greater negative stereotypes and are more susceptible to racism and discrimination in the labour market, this measure also provides an origin-level control for risk of labour market discrimination. Moderation by respondent's level of education is assessed by modelling the tertiary qualified (the respondent has a university degree or equivalent) separately from those with lower credentials, and those whose qualification was obtained in the UK vs those who qualified abroad. Moderation by migration regime is assessed by comparing those who migrated under free movement vs those subject to immigration control (often know as 'third country nationals' or TCNs). Given our earliest cohort immigrated after 1967, when immigration controls on former colonial subjects had already been imposed, this free movement encompasses those who were from one of the original EU15 countries and migrated after 1992, or from one of the A8 EU expansion countries and migrated after 2004, or are from the Republic of Ireland. In Appendix Table A2, we show that there is sufficient variation to test the associations across sources of heterogeneity, controlling for the others.

2.2.5. **Controls**

To adjust for potential confounders in the association between educational selection and labour market outcomes and mechanisms, we include a set of relevant controls in our multivariate analyses. These controls were chosen as they are causes of educational selectivity and the outcomes under consideration: for instance, marriage is

known to reduce the educational selectivity required for a visa in the UK while also influencing labour market outcomes.

Migration related: dummies for: whether English was spoken as first language/in childhood; immigrant arrival cohort (pre-1981,
81–91, 91–96, 96–2003, 2004–2008, 2008–2014); migration regime, and advanced vs other economies, coded as described above.

Socioeconomic: absolute level of qualifications, using collapsed measures from the Barro-Lee categories: due to small numbers in the lowest educational categories, we combine no formal school, less than primary, and primary into a single "primary or less", category; and whether respondents' qualifications were obtained in the UK (described above).

For labour market outcomes only, we also control for: number of children in household (0, 1, 2, 3), marital status (single, married, divorced/separated/widowed), and, for earnings only, hours worked.

We provide full descriptive statistics of all measures for men and women in the Appendix, Table A3.

2.3. Analytical strategy

In the next section, we first present a description of the extent of educational selection across our sample, by cohort and migration regime, splitting the cohorts according to arrival before or after 2004, when intraEuropean migration under free movement increased dramatically. We then evaluate the extent to which educational selection is positively associated with labour market outcomes, net of level of education and other controls. In the subsequent section, we establish that our theorised mechanisms are independently associated with labour market outcomes in our immigrant sample, and test, first in bivariate analysis and then in multivariate models, the relationship between educational selection and each of the mechanisms. We conduct separate analyses for men and women, given women's different labour market and occupational distributions, as well as some variation in their characteristics.

Finally, we subject these main results to a series of tests for heterogeneity in the associations, as described above. We used seemingly unrelated regression to estimate whether the selection effect differs significantly for these groups. For these models we do not separate men and women to preserve sample size, and instead control for sex.

3. Educational selection and labour market outcomes

Fig. 2 plots educational selection across our sample. The current stock of foreign born in the UK is on average positively selected, with a mean educational selection score of 77 for both men and women by 2011/12. Even though migrants arriving under free movement are consistently less positively selected than those subject to immigration control, the bulk of the distributions, for both pre- and post-2004 migration streams, are well above a score of 50. For all cohorts and both migration regimes, the average immigrant to the UK is more highly educated than the average sending country resident of the same age and sex.

Having established the extent of selection, we next ascertain if greater selection brings rewards in the labour market. We present the results of a series of stepwise multivariate regressions of three labour market measures on educational selection in Table 1.

In Models 1 and 2, with no controls for absolute level of education, we see a positive association between educational selection and wages and obtaining a professional job. This is unsurprising since those who are more selected will tend to be more educated. Somewhat less expected is that we observe only a marginally significant association between educational selection and employment for women, and a marginally negative association with employment for men, even before controlling for absolute educational level. After the addition of this control, all positive associations between educational selection and labour market success disappear in Model

3. Net of educational attainment, being more positively selected has a negative association with employment for both men and women and a negative association with wages for men. Further controls for migration regime and sending country development do little to alter this negative association; however in Model 4 we do see a positive association between selection and the chance of having a professional job for women. Given Model 4 encompasses origin-level controls (whether or not subject to visa restrictions and degree of development), this might suggest that for this outcome at least, selection may provide economic gains, at least for women, for those moving under free movement or for those coming from less developed economies.

To assess such potential sources of heterogeneity, we split our sample by educational attainment (tertiary educated v less than tertiary educated), those with UK credentials vs those without, those migrating under free movement vs those requiring visas, and by sending country development. The results are in the Appendix Table A10. We did not find any heterogeneity in the general null or negative association of educational selectivity with labour market outcomes, with one exception: a positive association between educational selectivity and wages for immigrants with a tertiary degree. In addition, whereas third country migrants who are more positively selected are more likely to be out of work, this negative relationship is weaker for EU migrants. Overall, we provide little evidence to support and some to contradict the expectation of a positive association between educational selectivity and labour market outcomes.

Next, we assess whether the relationship between educational selectivity and labour market relevant mechanisms is in line with these findings.

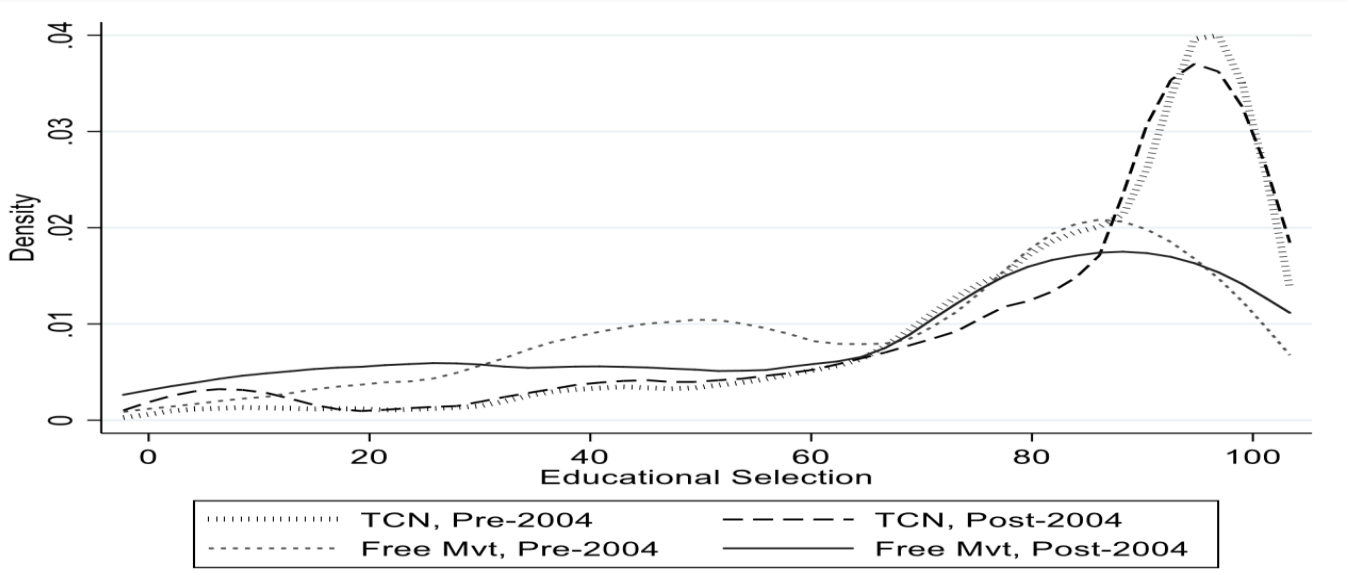

Fig. 2. Educational selection by migration regime and cohort. 'TCN' stands for third country national.

Table 1

Results of multivariate models of labour market outcomes regressed on educational selection and controls.

Association between selection and	Women							
	Model 1		Model 2		Model 3		Model 4	
	Coef	SE	Coef	SE	Coef	SE		
In Work	0.001	0.003	0.005	0.003	− 0.010*	0.004	− 0.010*	0.004
Logged Positive Wages	0.007**	0.001	0.006**	0.001	0	0.002	0.003	0.002
Professional Job	0.027**	0.005	0.032**	0.006	0.008	0.007	0.015*	0.008

	Men							
	Model 1		Model 2		Model 3		Model 4	

	Coef	SE	Coef	SE	Coef	SE	Coef	SE
In Work	− 0.006	0.004	− 0.009	0.005	− 0.026**	0.009	− 0.027**	0.009
Logged Positive Wages	0.007**	0.001	0.006**	0.001	− 0.004**	0.002	− 0.003*	0.002
Professional Job	0.038**	0.006	0.037**	0.007	− 0.006	0.007	0.001	0.008

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance.

4. Selection mechanisms: bivariate and multivariate associations with educational selection

We first ensure that the posited mechanisms do, in fact, predict labour market outcomes for the foreign born. On the right-hand side of Table 2, we show the standardised coefficient from a regression of being in work, logged positive wages, and professional occupation on each mechanism, with absolute education controlled. As can be seen by the statistically significant and positively signed coefficients, the majority of the mechanisms posited do indeed lead to better labour market outcomes. Despite some variation across measures or between women and men, it is clear that, except for agreeableness and having a large share of friends who are family members, these are "economically-relevant" mechanisms for the foreign born.

Next, as a first step to assess the importance of absolute educational attainment versus educational selectivity, we compare the bivariate association between each of the mechanisms and these measures. These correlation coefficients are found in the left-hand columns of Table 2.

We see in the first column of Table 2 that the mechanisms relating to cognitive ability and general health are linked to absolute education levels for both men and women. Interestingly, while education is also linked to social networks for women and to openness for both men and women, as we might expect if it captures socioeconomic advantage more generally and a privileged 'habitus', it is not associated with networks for men, nor with any of the other non-cognitive measures. In the case of conscientiousness, which is linked to learning, this is surprising; while the lack of association with networks for men (though the signs are in the expected

Table 2

Relationship between mediators and absolute education, educational selection, and labour market outcomes.

	Women			
	Correlation Coefficient		Standardised Regression Coefficient Controlling for Absolute Education	
Absolute Educational Selection	Education	In Work	Logged Wages Professional Job	
Cognitive Ability: Verbal (0–41)	0.41*	0.08	0.18*	0.06	0.16*
Cognitive Ability: Numerical (0–5)	0.48*	0.14	0.17*	0.08*	0.13*
Agreeableness (1–7)	0.03	0.15	0.03	0.03	− 0.003
Conscientiousness (2–7)	0.11	0.08	0.12*	0.06	0.03
Extraversion (1–7)	0.11	− 0.01	0.06*	0.02	0.03
Neuroticism (1–7)	− 0.05	− 0.06	− 0.03	0.01	0.01

Openness (1–7)	0.20*	0.06	0.08*	0.03	0.07*
GHQ − 0.5		− 0.04	− 0.14*	− 0.06	− 0.05
General Health	− 0.23*	− 0.04	− 0.19*	− 0.11*	− 0.09*
Friends: same ethnicity	− 0.14	− 0.07	− 0.11*	− 0.01	− 0.01
Friends: have job	0.24*	0.03	0.31*	0.15*	0.11*
Friends: family	− 0.12	− 0.03	− 0.05	− 0.03	− 0.01
Friends: same area	− 0.23*	− 0.11	− 0.13*	− 0.13*	− 0.10*

Correlation Coefficient Standardised Regression Coefficient Controlling for Absolute

Men

Education

Absolute Education	Educational Selection In Work		Logged Wages		Professional Job
Cognitive Ability: Verbal (0–41)	0.32*	0.18*	0.10*	0.16*	0.18*
Cognitive Ability: Numerical (0–5)	0.36*	0.24*	0.13*	0.20*	0.21*
Agreeableness (1–7)	0.04	0.11	0.03	0.01	0.03
Conscientiousness (2–7)	0.12	0.08	0.08*	0.10*	0.02
Extraversion (1–7)	0.04	0.04	0.001	0.02	0.008
Neuroticism (1–7)	− 0.05	− 0.05	− 0.13*	− 0.05	− 0.02
Openness (1–7)	0.27*	0.16	0.10*	0.05	0.09*
GHQ − 0.09		− 0.08	− 0.25*	− 0.06	− 0.04
General Health	− 0.21*	− 0.03	− 0.32*	− 0.06	− 0.08*
Friends: same ethnicity	− 0.05	− 0.03	− 0.02	− 0.06	− 0.03
Friends: have job	0.12	0.02	0.29*	0.12*	0.06
Friends: family	− 0.11	− 0.09	− 0.03	− 0.02	− 0.04
Friends: same area	− 0.14	− 0.07	0.03	− 0.05	− 0.08*

Note: Correlations and Regressions for Logged Positive Wages and Professional Job only for those in work. *Denotes significant associations at the 0.05 level. direction) may stem from the differences in the nature and function of women's networks. For example, having employed networks has been shown to be particularly

important for women's participation, particularly when coming from contexts with more traditional gender roles (c.f. Guveli et al., 2015). For the other non-cognitive measures (agreeableness, extraversion and neuroticism), these may be more likely to be associated with rank position, rather than absolute educational level per se, since they are less directly associated with learning than conscientiousness and openness. However, when we turn to the associations with educational selection, we find very few significant correlations– even at the bivariate levels with no further controls. The only significant correlation coefficients for educational selection are for cognitive ability for men. This finding of only very few correlations between educational selection and labour market mechanisms, at even the bivariate level, contradicts much of the theoretical work on educational selectivity.

To explore this further, we examine the educational selection coefficients from a series of multivariate models shown in Table 3. The basic model (1) controls only for age, while Model 2 adds year of arrival and native English ability. Further models add additional confounders including absolute levels of education and UK certification (3), and finally, controls for migration regime and whether the sending country is an advanced economy (4).

In terms of skills, for women there is a positive association between educational selection and numerical cognitive ability and openness in models 1 and 2, but once absolute education is controlled all positive associations disappear and the association between educational selection and extraversion, verbal and numerical cognitive ability turns negative. The negative association between both measures of cognitive ability and selection remains even in the final model with migration regime and sending country development controlled, suggesting the results are not driven by different meanings of selection in more or less developed countries.

For men, the initial positive association between educational selection and both measures of cognitive ability, as well as openness, diminish to insignificance once absolute education is controlled. However, in the final model, which adjusts for migration regime and sending country development, educational selection is positively associated with verbal cognitive ability (a positive correlate of labour market outcomes). Selection is also positively associated with agreeableness for men across the models, but this characteristic has no correlation with labour market outcomes in this sample.

In terms of social networks, women who are more positively selected are slightly less likely to have a friendship network that is majority employed, once education and all other confounders are accounted for (models 3 & 4). For men, there are no associations with social network measures in any model. Finally, for health, with all confounders controlled there is no association between educational selection and mental or physical health for men or women. Thus, controlling for potential confounders does little to alter the general **Table 3**

Results of multivariate models of associations between selection and proposed mechanisms.

Women								
Model 1		Model 2		Model 3		Model 4		
Coef	SE	Coef	SE	Coef	SE	Coef	SE	
Cognitive: verbal	0.011	0.009	0.016	0.009	− 0.063**	0.011	− 0.035**	0.011
Cognitive: numeric	0.005**	0.002	0.005**	0.002	− 0.011**	0.002	− 0.007**	0.002
Openness	0.004*	0.002	0.005*	0.002	− 0.003	0.002	− 0.002	0.002
Extraversion	0.001	0.002	0.001	0.002	− .006**	0.002	− 0.004	0.002
Conscientiousness	0.002	0.002	0.003	0.002	0.000	0.002	0.000	0.002
Agreeableness	0.001	0.002	0.001	0.002	0.002	0.002	0.002	0.002
Neuroticism	− 0.003	0.002	− 0.003	0.002	− 0.003	0.002	− 0.002	0.003
Friends: same ethnicity	− 0.005	0.003	− 0.005	0.003	− 0.005	0.004	0.002	0.004
Friends: have job	0.001	0.003	0.001	0.003	− 0.013**	0.004	−	

0.011* 0.005 Friends: family − 0.001 0.004 − 0.001 0.004 0.006 0.005 0.003 0.005 Friends: same area − 0.009** 0.003 − 0.010** 0.003 − 0.002 0.004 − 0.003 0.004 General health − 0.002 0.001 − 0.003 0.001 0.005** 0.002 0.003 0.002

GHQ − 0.006 0.008 − 0.008 0.008 0.009 0.010 0.006 0.010

Men

Model 1	Model 2		Model 4		Model 3			
		SE		SE	Coef	SE		SE
Coef	Coef			Coef	0.008 0.001			

Cognitive: verbal 0.051** 0.011 0.047** 0.011 0.017 0.037* 0.016

Cognitive: numeric 0.009** 0.002 0.009** 0.002 0.003 0.005 0.003 Openness 0.009** 0.003 0.009** 0.003 0.001 0.004 0.001 0.004

Extraversion 0.003 0.002 0.003 0.002 0.005 0.003 0.005 0.003 Conscientiousness 0.004 0.002 0.003 0.002 0.001 0.003 0.001 0.004 Agreeableness 0.006** 0.002 0.005* 0.002 0.009** 0.003 0.008* 0.003 Neuroticism − 0.003 0.003 − 0.002 0.003 − 0.003 0.004 − 0.001 0.004 Friends same ethnicity − 0.002 0.003 − 0.002 0.004 − 0.001 0.005 0.000 0.006

Friends: have job 0.005 0.005 0.006 0.005 − 0.001 0.007 − 0.017 0.01

Friends: family − 0.008 0.004 − 0.007 0.004 − 0.002 0.007 − 0.007 0.007 Friends same area − 0.004 0.003 − 0.003 0.003 0.008 0.006 − 0.007 0.007 General health − 0.004* 0.002 − 0.004* 0.002 0.001 0.003 − 0.001 0.002

GHQ 0.000 0.010 − 0.001 0.010 0.013 0.016 0.020 0.015

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * denotes p-value of < .05 and ** p-value of < .01 for two-sided test for statistical significance.

finding that educational selection is for the most part not positively associated with mechanisms that lead to labour market success.

To summarise, we find little evidence to support the contention that selection is associated with economically relevant characteristics. Similar to what has been demonstrated in analysis of the European (Schmidt et al., 2021) and Italian case (Brunori et al.,

Table 4

Heterogeneity in the relationship between educational selection and labour market mechanisms.

Suest Difference in Coefficients Across Equations,
Difference and Standard Error

Respondent Tert - Respondent		UK Respondent Free Advanced			
Respondent	LT Cert - Respondent	Mvt - Non-	Free Sending		
Tert	No UK Cert	Mvt	Country - Other		
Cognitive: verbal	− 0.050	0.002	0.044	0.038	0.035	− 0.034
0.001						0.058

Cognitive: numeric	0.002	0.008	0.008	0.009	0.011	0.006	0.002	0.005
Openness	0.010	0.011	−0.003	0.010	0.016+	0.009	0.003	0.008
Extraversion	−0.017+	0.011	−0.013	0.011	0.019*	0.009	0.002	0.007
Conscientiousness	0.019*	0.009	0.013	0.009	0.003	0.008	0.003	0.006
Agreeableness	0.020*	0.010	0.001	0.009	−0.001	0.008	0.000	0.006
Neuroticism	−0.026*	0.012	−0.006	0.012	0.001	0.010	−0.002	0.008
Friends: same ethnicity	−0.004	0.004	−0.001	0.004	−0.002	0.003	0.000	0.002
Friends: have job	−0.005	0.003	−0.001	0.003	0.006*	0.003	0.001	0.002
Friends: family	0.000	0.003	−0.003	0.003	−0.002	0.003	−0.002	0.002
Friends: same area	0.001	0.003	0.001	0.003	0.000	0.003	−0.001	0.002
General health	−0.008	0.008	−0.010	0.007	−0.004	0.006	0.005	0.006
GHQ	−0.033	0.045	−0.015	0.037	−0.008	0.035	−0.009	0.032
N	1633	1102	2272	463	259	2476	423	2312

Source: Understanding Society Wave 3. Regressions from model 4 as in Table 3 above. +p-value of .1 * pvalue of .05 and ** p-value of < .01 for two- sided test for statistical significance. 'Tert' stands for tertiary level qualifications and 'LT Tert' for less than tertiary qualifications. 'Advanced' stands for advanced economy versus less economically developed.

2020), we find only localised evidence of a positive association between selectivity and labour market outcomes: for professional occupations for women, and for wages of the tertiary educated. Our findings of largely negative or non-existent relationships between selection and labour market outcomes is consistent with our finding that rank position on observables in country of origin has basically no positive relationship with social networks, health, cognitive or non-cognitive resources. The single exception is a relationship with cognitive verbal skills for men, which is itself positively associated with labour market outcomes. However, the fact that a negative relationship is found for women and there is no relationship with numeracy skills suggests we should not place too much weight on this single 'expected' outcome. This is not to say that higher levels of educational attainment do not bring labour market advantages, but that relative rank appears not to bring substantive additional gains.

5. Heterogeneity in the selection – mechanism link

In this final section we test whether aggregate null effects across the sample are concealing positive associations among specific subpopulations. We therefore estimate a further set of multivariate models including all controls, as in model 4 above, for each mechanism, but splitting the samples to allow the effect of educational selection

and the control variables to differ across migrant subpopulations of varying sending country development, absolute level of education, place of certification, and migration regime.

These tests are summarised in Table 4 and reveal few differences in the lack of association between selection and the specific mechanism. The only statistically significant moderators of this relationship are respondent's level of absolute education (tertiary vs below) and migration regime (free movement vs those subject to migration control).

The statistically significant differences among those with a tertiary degree do not, however, show a consistent pattern of positive associations (see also Appendix, Figure A1). In this subpopulation of those with a tertiary degree, the more positively selected are more likely to be conscientious and less likely to be neurotic, which are respectively positively and negatively (for men) associated with employment (see Table 2). They are also more likely to be agreeable, which has no relationship with labour market outcomes, and less likely to be extraverted, which is positively associated with employment (for women). Among those experiencing free movement, educational selectivity shows a more consistent set of positive associations: with openness, extraversion and the proportion of the friendship network employed (see also Appendix, Figure A2). The results are consistent with the idea that free movement enables a more representative sample of the population to migrate, hence those at different levels of educational selectivity bring with them the characteristics associated with their rank position. These interactions also correspond to the positive association between educational selectivity and wages for only the tertiary educated, and for the null (rather than negative) association between selectivity and employment for free-movement migrants. But they are far from conclusive in demonstrating the relationship between selection, mechanisms and outcomes; and with this number of comparisons, it should be borne in mind that the likelihood of finding at least one significant difference by chance is high ($1 - (1 - 0.05)^{52} = 93\%$, or 99.6% at the 0.1% level).

6. Discussion and conclusions

In this paper, we have set out and tested how and why educational selection might affect labour market outcomes. Using a case with diverse migration flows and capitalising on a rich data set with multiple measures, we tested whether educational selection was associated with labour market position and with multiple mechanisms theoretically expected to link immigrants' relative educational position to more positive economic outcomes. Contrary to the assumptions of the selectivity hypothesis, we find only very localised support for a positive association between educational selectivity and labour market outcomes. Correspondingly, with the single exception of verbal cognitive skills for men, educational selection was not associated with each of the posited mechanisms. Indeed, for some mechanisms (cognitive ability and friendship networks for women) educational selection is negatively associated with the mechanisms that bring labour market success. An examination of heterogeneity in the mechanism links sheds some light on these findings. The more positively selected tertiary educated displayed somewhat more positive non-cognitive skills, which may help explain higher wages, though the picture was mixed. The greater extraversion, openness and employed networks of more positively selected free movement migrants may, meanwhile, help explain the less negative association between selectivity and employment as compared to those migrating under visa controls, but doesn't explain why the relationship was not positive.

Overall, our findings corroborate emerging research that uses direct micro-level data on immigrant educational selection and fails to identify the expected labour market advantages for immigrants. Examining immigrant economic outcomes across Europe, Schmidt et al. (2021) suggest that alternative opportunities outside of the labour market for elite migrants may explain lower employment among the most positively selected foreign born. Similarly, Brunori et al. (2020) also interpret their counterintuitive finding of lower employment among

the more positively selected as arising from higher expectations and an unwillingness to take less desirable employment. Yet beyond sensitivity tests on different subgroups (men v women, higher vs lower educated, more v less recently arrived immigrants) in their data, these studies, as with others attempting to evaluate the role of selection, cannot decisively test the mechanisms underlying their findings, and all authors call for further work in this area.

In answering that call, we have shown that many of the actual mechanisms underlying a hypothesized positive relationship between educational selection and labour market outcomes do not receive empirical support – at least not in the UKcase. Our tests for heterogeneity, while tentative given the large number of comparisons involved, are suggestive that the more positive relationships for the tertiary educated observed in our own and others work may be mediated by a positive association between selectivity and non- cognitive skills for this specific group. Without detailed information on all our origin countries, we cannot ascertain if the relationship between educational rank and labour market relevant mechanisms (skills, social capital, and health) holds in sending country populations overall but not among those who migrate. This remains a question for future investigation. However, the likelihood that the relationship between rank and mechanisms is found in the sending countries but is confounded by other drivers of or constraints on migration in the immigrant population receives some qualified empirical support from our heterogeneity analysis, where we observed more positive selectivity effects for immigrants who experienced free movement. The conditions under which immigrants migrate and the extent to which emigration is shaped by stratification processes at origin as well as entry conditions at destination are important considerations for future research in this area.

Our study is not without its limitations. While we have a very rich set of potential correlates of educational selection, our measures of non-cognitive skills may not fully reflect those attributes which are most closely linked to migrant selectivity (Model 2018). A further potential limitation is that our measures of educational qualifications must be harmonised to the Barro-Lee dataset. Given the high levels of qualifications among our immigrant sample, any selection score may conceal substantial heterogeneity, especially among the tertiary educated. We would argue, however, that we use a method that has been successfully employed elsewhere to demonstrate the benefits of selection; and the heterogeneity analysis for samples with and without tertiary education also address this issue head on. It might also be objected that education systems differ in the extent to which given levels of education deliver skills and other positive attributes. But again, our heterogeneity analysis addresses whether the pattern holds for more and less developed countries.

We have shown that immigrants to the UK are selected on education and that education itself is positive for their outcomes. While our analysis indicates that such selection is not generally associated with other economically beneficial characteristics, we cannot conclude from this analysis that immigrants are not positively selected on such characteristics – only that they are not differentially selected by educational rank position. A key, if demanding, future agenda for immigrant selectivity research is to establish in what ways and the extent to which those who migrate differ in such typically unobserved characteristics from those who stay. Only then can we establish whether or not the aims of receiving country migration policy to recruit 'the brightest and best' (Migration Advisory Committee [MAC] 2020) are indeed delivering what they intend. **Funding**

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Complete tertiary: those with a university degree (BA, BSc or equivalent) or higher degree (MA, MSc, PhD, MA).
Incomplete tertiary: professional qualifications obtained after 18 that include higher level vocational training, a nursing or teaching qualification that implies post-secondary training that is not University. For those with 'other qualifications' we also include in this category respondents who left school aged between 19 and 50, as well as those who are at least 18 and are still in higher or further education.
Completed secondary: those with secondary qualifications obtained at the age of 15 or older, including Alevels, GCSEs, O-levels, and vocational certifications such as ONC/OND and BTEC. For those with 'other qualifications' we also include in this category respondents who left school between 15 and 18.
Incomplete secondary: those who remained in school until at least age 12, have other forms of qualification (including key skills and entry level skills), and are not otherwise accounted for.
Complete primary: those who report being in school to age 10, as well as those who report leaving school between 10 and 14 and are missing information on or have no qualifications.
Incomplete primary: those who left education before age 10 but at least the age of 7 and report no qualifications.
No formal schooling: those who report never going to school in a separate question, or who report an age below 7 as their school leaving age. **Table A1**
Number of cases per country, grouped according to whether less or more advanced economies as identified in the Barro-Lee dataset

AFG 13 IRN 22 QAT 2 AUS 18 ALB 3 IRQ 19 ROM 2 AUT 6

Table A1)

Less Developed Economies						Advanced Economies	
Less Developed Economies						Advanced Economies	
ARG	2	ISR	4	ROU	15	BEL	4
BDI	4	JAM	48	RUS	14	CAN	13
BEN	1	JOR	1	RWA	2	CHE	4
BGD	254	KAZ	3	SAU	2	DEU	29
BGR	7	KEN	45	SDN	13	DNK	7
BOL	1	KOR	1	SEN	3	ESP	18
BRA	10	KWT	1	SER	4	FIN	6
BRB	3	LBR	2	SGP	8	FRA	33
CHL	4	LBY	2	SLE	15	GRC	5
CHN	62	LKA	121	SLV	1	IRL	87
CIV	11	LTU	21	SVK	6	ITA	25
CMR	5	LVA	8	SVN	1	JPN	9
COG	21	MAR	10	SYR	1	NLD	15
COL	7	MEX	4	TGO	1	NOR	2
CUB	2	MLT	4	THA	26	NZL	27
CYP	4	MMR	4	TTO	17	PRT	19

CZE	6	MOZ	2	TUN	1	SWE	8
DZA	12	MUS	23	TWN	2	TUR	39
ECU	2	MWI	9	TZA	15	USA	49
EGY	14	MYS	30	UGA	30		
FJI	2	NAM	2	UKR	7		
GHA	94	NPL	15	VEN	1		
GMB	6	PAK	332	VNM	9		
GUY	5	PAN	1	YEM	10		
HUN	12	PHL	52	ZAF	69		
IDN	9	POL	170	ZMB	13		
IND	427			ZWE	61		

Table A2

Proportion with tertiary educated parent, UK credentials, a tertiary degree, by migration regime and sending country development

Level of Development		Migration Regime	
		TCN	Free Movement
Less Developed Countries	UK Credential	.158	.042
	Tertiary Degree	.376	.423
Advanced Countries	UK Credential	.25	.278
	Tertiary Degree	.579	.524

Source: Understanding Society Wave 3.

Table A3

Measure (range)	WEIGHTED				UNWEIGHTED			
					Men (N = 1162)		Women (N = 1573)	
		SD		SD	Mean	SD	Mean	SD
Proportion Men and Women	0.42		0.58					
Educational Selection (5_99)	76.83	25.17	76.64	24.95	76.61	22.23	79.21	23.05
Age (25_64)	42.40	10.39	41.65	10.37	41.00	10.08	41.82	10.26
Number of Children (0_3)	0.90	1.02	0.93	1.00	0.96	1.09	1.04	1.06

Descriptive statistics by sex, weighted and unweighted proportions and means.

Men Women

Mean Mean

Table A3)

Measure (range)	WEIGHTED				UNWEIGHTED			
	Men		Women		Men (N = 1162)		Women (N = 1573)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age at Immigration (18–63)	28.93	7.72	27.68	7.49	28.63	7.75	27.15	7.25
Cognitive Ability: Verbal (0–41)	17.24	6.63	18.58	6.73	17.56	6.22	16.86	6.59
Cognitive Ability: Numerical	3.58	1.16	3.25	1.16	3.66	1.13	2.99	1.21

(0–5)	1.14	5.62	1.14	5.41	1.13	5.67	1.14
Agreeableness (1–7)	5.39	1.16	5.53	1.12	5.37	1.18	5.44	1.15
Conscientiousness (2–7)	5.32	1.18	4.50	1.34	4.22	1.18	4.33	1.33
Extraversion (1–7)	4.22	1.31	3.70	1.40	3.18	1.32	3.66	1.40
Neuroticism (1–7)	3.24	1.33	4.76	1.32	4.73	1.35	4.61	1.35
Openness (1–7)	4.66		0.69		0.69		0.69	
Friends: same ethnicity	0.69		0.70		0.90		0.60	
Friends: have job	0.86		0.15		0.13		0.17	
Friends: family	0.15		0.30		0.26		0.35	
Friends: same area	0.26		0.18		0.19		0.16	
Has a UK Certification	0.18		0.26		0.27		0.21	
Spoke English as a child	0.27	1.05	2.42	1.08	2.23	1.08	2.61	1.13
General Health (1–5)	2.38	5.07	11.40	5.49	10.08	5.31	11.72	5.62
GHQ Score (0–36)	10.64							
Proportion Men and Women	0.42	0.58						

Level of Education				
Primary or Less	0.02	0.02	0.02	0.04
Some Secondary	0.12	0.13	0.15	0.18
Completed Secondary	0.26	0.22	0.28	0.25
Some Tertiary	0.12	0.17	0.11	0.16
Completed Tertiary	0.48	0.46	0.44	0.37
Migration regime: free		0.18	0.08	0.10
0.16 movement				
Sending Country	0.25	0.28	0.25	0.17
Development: Advanced				
Arrival Cohort Pre-81	0.10	0.10	0.09	0.11
81–90	0.12	0.12	0.13	0.14
91–95	0.09	0.09	0.11	0.10
96–03	0.30	0.37	0.34	0.36
2004–2008	0.30	0.26	0.26	0.23
2008–2015	0.09	0.07	0.08	0.06
UK Region				
North East	0.02	0.01	0.02	0.01
North West	0.07	0.07	0.08	0.07
Yorkshire and the Humber	0.06	0.07	0.06	0.06
East Midlands	0.06	0.07	0.06	0.06
West Midlands	0.07	0.06	0.09	0.08
East of England	0.11	0.10	0.08	0.08
London	0.32	0.30	0.43	0.42

South East	0.14		0.17		0.09		0.11	
South West	0.06		0.07		0.03		0.04	
Wales	0.02		0.03		0.02		0.02	
Scotland	0.05		0.04		0.03		0.02	
Northern Ireland	0.02		0.02		0.02		0.02	
Marital Status								
Single	0.18		0.18		0.13		0.14	
Married or Cohabiting	0.74		0.67		0.81		0.69	
Divorced, Separated or Widowed	0.08		0.16		0.07		0.16	
Currently in work (if ever worked)	0.83		0.64		0.80		0.56	
Among those Currently in Work					N = 901		N = 763	
Log Wage (− 2.52-10.56)	7.52	0.94	7.18	1.02	7.37	0.98	7.11	0.98
Hours per week (5–84)	37.37	9.70	30.22	11.56	36.19	9.74	29.96	11.37
Has professional job	0.42		0.46		0.37		0.42	

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance. Source: Understanding Society Wave 3. Proportions and Means computed using the MI suite in Stata 15. Standard deviations computed using the user written command MISUM and should be interpreted with caution as MI data is used primarily for inference rather than description.

Table A4

Full Regression Results on Employment

	Women			
	1	2	3	4
Educational Selection	0.001	0.003	0.005	0.003
Age	0.239**	0.052	0.412**	0.068
Age Squared	− 0.001		− 0.001	
	0.003**		0.005**	
Number of Children: No Children	0	.	0	.
One Child			− 0.193	
			0.774**	
Two Children			− 0.209	
			1.367**	
Three or More Children			− 0.29	
			2.359**	
Spoke English as a child		0.687**	0.178	0.439*
Marital Status: Single		0	.	0
	0.010*	0.004	− 0.010*	0.004
	0.485**	0.072	0.485**	0.073
		0.001	− 0.001	
		0.006**		0.006**
		0	.	0
		0.199	− 0.198	
		0.841**		0.841**
		0.219	− 0.219	
		1.446**		1.446**
		0.286	− 0.288	
		2.257**		2.257**
		0.183	0.466*	0.184
		.	0	.

Married or Cohabiting	−0.495*	0.215	−0.396	0.23	−0.372	0.231
Divorced, Separated or Widowed	−0.122	0.268	0.099	0.281	0.123	0.283
UK Region: North East	0	.	0	.	0	.
North West	−0.128	0.589	−0.06	0.613	−0.016	0.603
Yorkshire and the Humber	−0.013	0.588	0.128		0.606	0.176

Table A4

	Women					
	1		2		3	
East Midlands	0.017	0.583	0.12	0.602	0.148	0.593
West Midlands	−0.277	0.59	−0.097	0.614	−0.056	0.608
East of England	−0.467	0.577	−0.516	0.593	−0.468	0.587
London	−0.34	0.545	−0.272	0.562	−0.217	0.557
South East	−0.079	0.567	−0.075	0.584	−0.019	0.577
South West	0.353	0.611	0.161	0.622	0.224	0.619
Wales	0.413	0.699	0.427	0.723	0.477	0.724
Scotland	−0.06	0.65	−0.178	0.666	−0.106	0.665
Northern Ireland	0.804	0.691	0.807	0.698	0.815	0.699
Arrival Cohort: Pre-81	0	.	0	.	0	.
81-90	−0.213	0.326	−0.555	0.359	−0.536	0.361
91-95	−0.237	0.369	−0.637	0.406	−0.587	0.41
96-03	−0.214	0.331	−0.652	0.366	−0.657	0.368
2004–2008	−0.014	0.357	−0.461	0.393	−0.475	0.394
2008–2015	−0.274	0.428	−0.598	0.447	−0.606	0.449
Educational Attainment:						
Primary or Less	1.606**	1.609**				
Some Secondary	0	.	0	.		
Completed Secondary			1.059**	0.24	1.063**	0.241
Some Tertiary			1.748**	0.297	1.756**	0.3
Completed Tertiary					1.521**	0.277
Has a UK credential: no					0	.
Yes					0.196	0.221
Migration regime: Third country						
Free movement						
Sending Country Development: Other						
Advanced						
Constant	−1.132	−1.493	−1.559	−1.559		
	4.361**	6.307**	7.630**	7.693**		

	Men							
	1		2		3		4	
Educational Selection	−0.006	0.004	−0.009	0.005	−0.009	−0.009		
				0.026**		0.027**		
Age	0.225**	0.083	0.212*		0.106	0.205	0.109	0.204
Age Squared	−0.001				0.001	−0.001	−0.001	
	0.003**	0.003**			0.003**		0.003**	
Number of Children: No Children	0				.	0	.	0
One Child	0.084				0.317	0.089	0.316	0.066

Two Children	0.235	0.355	0.265	0.366	0.258	0.367
Three or More Children	− 0.24	0.403	− 0.113	0.386	− 0.123	0.383
Spoke English as a child	0.712*	0.29	0.604*	0.295	0.625*	0.3
Marital Status: Single	0	.	0	.	0	.
Married or Cohabiting	1.128**	0.424	1.191**	0.428	1.231**	0.415
Divorced, Separated or Widowed	0.18	0.543	0.229	0.549	0.276	0.533
UK Region: North East	0	.	0	.	0	.
North West	0.818	0.96	0.638	0.993	0.622	0.994
Yorkshire and the Humber	0.577	0.977	0.458	1.006	0.492	1.008
East Midlands	0.791	1.008	0.837	1.064	0.83	1.063
West Midlands	1.085	0.945	1.002	0.977	0.963	0.979
East of England	1.905	1.037	1.688	1.056	1.685	1.056
London	0.769	0.913	0.645	0.95	0.662	0.945
South East	1.456	0.94	1.269	0.971	1.304	0.972
South West	0.74	1.028	0.62	1.066	0.664	1.075
Wales	− 0.204	1.019	− 0.329	1.063	− 0.332	1.069
Scotland	1.133	1.068	0.92	1.099	0.968	1.085
Northern Ireland	0.078	1.134	− 0.137	1.156	− 0.159	1.163
Arrival Cohort: Pre-81	0	.	0	.	0	.
81-90	− 0.239	0.492	− 0.314	0.497	− 0.206	0.485
91-95	− 0.784	0.542	− 0.867	0.564	− 0.787	0.554
96-03	− 0.72	0.471	− 0.834	0.502	− 0.814	0.496
2004–2008	− 0.038	0.518	− 0.262	0.549	− 0.258	0.547
2008–2015	− 0.852	0.603	− 1.051	0.651	− 1.046	0.637
Educational Attainment: Primary or Less	0.195	0.692	0.15	0.689		
Some Secondary	0	.	0	.		
Completed Secondary	0.789*	0.378	0.804*	0.376		
Some Tertiary	1.133*	0.535	1.180*	0.543		
Completed Tertiary	1.479**	0.475	1.538**	0.472		
Has a UK credential: no	0	.	0	.		
Yes	0.187	0.349	0.221	0.35		
Migration regime: Third country	0	.				
Free movement	0.445	0.496				

Table A4

Women							
1		2		3		4	
Sending Country Development: Other						0	.
Advanced						− 0.328	0.35
Constant	− 1.069	1.823	− 1.549	2.393	− 0.94	2.402	− 0.958	2.391

Educational Selection	0.007**	0.001	0.006**	0.001	0	0.002	0.003	0.002
Age	0.110	0.063	0.053	0.051	0.059	0.051	0.047	0.048
Age Squared	− 0.001	0.001	−	0.001	0.001	− 0.001	0.001	− 0.001	0.001
Number of Children:	4.466**	1.204	0	.	0	.	0	.
No Children	Men		− 0.095	0.077	− 0.083	0.075	− 0.06	0.071

[1]

Table A5

Full Regression Results on Wages

	Women					
1		2		3		4	
One Child	− 0.143	0.104	− 0.104	0.107	− 0.07	0.104
Two Children	− 0.354*	0.159	− 0.332*	0.158	− 0.358*	0.16
Three or More Children		0.237**	0.077	0.203*	0.086	0.116	0.076
		0	.	0	.	0	.
Spoke English as a child		− 0.105	0.089	− 0.089	0.083	− 0.038	0.073
		− 0.012	0.118	0.021	0.106	0.087	0.107
Marital Status: Single		0	.	0	.	0	.
Married or Cohabiting		0.12	−	0.26	0.109	−	0.242	0.117	−	0.25
Divorced, Separated or Widowed		0.031	0.255	0.025	0.236	0.025	0.246
UK Region: North		0.065	0.245	0.092	0.222	0.076	0.232
East		0.041	0.284	0.082	0.26	0.093	0.268
North West		0.205	0.244	0.216	0.224	0.226	0.238
Yorkshire and the Humber		0.144	0.248	0.151	0.229	0.139	0.239
		0.108	0.238	0.121	0.225	0.09	0.244
East Midlands West Midlands		0.123	0.251	0.099	0.	233	0.079	0.244
		0.186	0.286	0.15			0.279
East of England		0.114	0.279	0.114	0.269	0.111	0.27
London		0.148	0.249	0.069	0.255	0.08	0.247
South East		0	.	0	0.236	0.016	.
South		0.382*	0.174	0.334	.	0	0.182
West		0.352	0.203	0.313	0.183	0.356	0.187
Wales		0.268	0.173	0.211	0.199	0.297	0.172
Scotland		0.162	0.186	0.13	0.169	0.255	0.185
Northern Ireland		0.187	0.187	0.135	0.18	0.19	0.192
Arrival Cohort: Pre-81		0.052**			0.184	0.201	0.005

					[2]							
					3.868**		0.005	0.051**		0.0050.053	**	0.262
							1.155	− 0.124		0.239 0.029		
81-90		0		.	0	.						
91-95	− 0.092		0.096	− 0.129		0.1						
									[3]			
96-03					0.250*					0.11	0.179	0.116
2004–2008					0.373**					0.14	0.199	0.171
2008–2015					0					.	0	.
Number of					0.082					0.1320.035		0.129
Worked					3.909**							.
	Hours									1.126 0		
Educational	0.085	0.091	Attainment:	Primary	0	.						
or Less			0.315**									0.116
Some Secondary			3.838**									1.101
					[4]							
Completed Secondary												
Some Tertiary												
Completed Tertiary												
Has a UK credential:												
no												
Yes												
Migration	regime:											
Third country												
Free movement												
Sending	Country											
Development: Other												
Advanced												
Constant												
Educational Selection		0.007**		0.001	0.006**		0.001	− 0.004**		0.002	− 0.003*	0.002
Age	0.05			0.041	0.031		0.036	0.05		0.0340.052		0.033
Age Squared	− 0.001			0	0		0	− 0.001		0	− 0.001	0

Number of Children: No Children	0	.	0	.	0	.
One Child	0.002	0.098	−0.004	0.09	0.018	0.088
Two Children	0.052	0.102	0.05	0.092	0.067	0.089
Three or More Children	−0.126	0.114	−0.118	0.102	−0.093	0.099
Spoke English as a child	0.313**	0.075	0.307**	0.073	0.234**	0.076
Marital Status: Single	0	.	0	.	0	.
Married or Cohabiting	0.096	0.101	0.102	0.095	0.074	0.104
Divorced, Separated or Widowed	0.142	0.155	0.146	0.149	0.109	0.147
UK Region: North East	0	.	0	.	0	.
North West	0.054	0.21	0.119	0.171	0.104	0.163

Table A5

Yorkshire and the Humber						
	Women					
	1		2		3	
			−0.054		−0.076	0.205
−0.043	0.163	0.158				
East Midlands	0.102	0.209	0.19	0.175	0.178	0.168
West Midlands			0.25	0.217	0.266	0.175
East of England			0.228	0.203	0.254	0.167
London			0.154	0.194	0.179	0.156
South East			0.386	0.202	0.392*	0.165
South West			0.136	0.21	0.221	0.172
Wales			0.033	0.232	0.115	0.187
Scotland			0.148	0.211	0.101	0.174
Northern Ireland			0.067	0.242	0.036	0.202
Arrival Cohort: Pre-81			0	.	0	.
81-90			−0.09	0.178	−0.111	0.163
91-95			−0.104	0.186	−0.116	0.168
96-03			0.123	0.175	0.069	0.154
2004–2008			0.014	0.175	−0.092	0.157
2008–2015			−0.048	0.227	−0.197	0.215
Number of Hours Worked			0.045**	0.005	0.045**	0.005
Educational Attainment: Primary or Less					−0.067	0.244
Some Secondary					0	.
Completed Secondary					0.065	0.108
Educational Selection	0.027**	0.005	0.032**	0.006	0.008	0.007

	4					
	−0.043	0.163	0.158			
East Midlands	0.263	0.169				
West Midlands	0.238	0.163				
East of England	0.142	0.147				
London	0.341*	0.162				
South East	0.169	0.168				
South West	0.098	0.191				
Wales	0.035	0.172				
Scotland	0.023	0.204				
Northern Ireland	0	.				
Arrival Cohort: Pre-81	−0.163	0.166				
81-90	−0.181	0.168				
91-95	0.063	0.158				
96-03	−0.07	0.158				
2004–2008	−0.199	0.217				
2008–2015	0.046**	0.005				
Number of Hours Worked	−0.045	0.227				
Educational Attainment: Primary or Less	0	.				
Some Secondary	0.062	0.107				
Completed Secondary	0.015*	0.008				
Educational Selection						

Age	0.159*	0.079	0.160	0.095	0.210*	0.1	0.194	0.099
Age Squared	−0.002*	0.001	−0.002	0.001	−0.002*	0.001	−0.002*	0.001
Number of Children: No Children	0	.	0	.	0	.		
One Child	−0.163	0.245	−0.059	0.263	−0.035	0.261		
Two Children	−0.744**	0.283	−0.570	0.305	−0.555	0.31		
Three or More Children	−0.536	0.448	−0.38	0.505	−0.491	0.536		
Spoke English as a child	0.924**	0.218	0.795**	0.232	0.633**	0.238		
Marital Status: Single	0	.	0	.	0	.		
Married or Cohabiting	−0.288	0.271	−0.157	0.277	−0.068	0.279		
Divorced, Separated or Widowed	−0.269	0.363	−0.062	0.39	0.063	0.396		
UK Region: North East	0	.	0	.	0	.		
North West	−1.046	1.383	−0.959	1.24	−1.042	1.459		
Yorkshire and the Humber	−1.837	1.407	−1.879	1.28	−2.027	1.502		
East Midlands	−1.749	1.376	−1.613	1.222	−1.748	1.441		
West Midlands	−1.557	1.377	−1.297	1.225	−1.392	1.444		
East of England	−1.414	1.376	−1.324	1.238	−1.431	1.453		
London	−1.255	1.354	−1.121	1.198	−1.26	1.423		
South East	−1.323	1.356	−1.147	1.207	−1.323	1.43		
South West	−1.013	1.372	−1.035	1.218	−1.234	1.447		
Wales	−1.128	1.459	−1.203	1.352	−1.441	1.565		
Scotland	−0.769	1.419	−0.653	1.263	−0.809	1.484		
Northern Ireland	−0.614	1.391	−0.833	1.241	−0.987	1.455		
Arrival Cohort: Pre-81	0	.	0	.	0	.		
81-90	0.496	0.487	0.149	0.528	0.153	0.523		
91-95	0.509	0.572	0.264	0.602	0.139	0.595		
96-03	0.588	0.504	0.376	0.533	0.446	0.521		
2004–2008	0.238	0.517	0.228	0.541	0.313	0.528		
Some Tertiary			0.087	0.17	0.064	0.161		
Completed Tertiary	0.719**	0.156	0.663**	0.154	Has a UK credential: no	0	.	
0	.	Yes	0.172*	0.086	0.157	0.085	Migration regime: Third country	0
.								
Free movement			−0.253	0.144				
Sending Country Development: Other			0	.				
Advanced			0.326**	0.102				
Constant	6.047**	0.84	4.442**	0.753	4.420**	0.713	4.313**	0.715

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds

migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance.

Table A6

Full Regression Results on Professional Job

Table A6

2008–2015	0.307	0.609	0.213	0.645	0.291	0.637
Educational Attainment:			0	.	0	.
University			2.268**	0.551	1.884**	0.564
			0	.	0	.
Some Tertiary			1.687**	0.563	1.518**	0.564
			0	.	0	.
Completed Secondary			0.812	0.593	0.716	0.6
Has UK Credential: no			0	.	0	.
Yes			0.911**	0.26		0.839**
			0.261			
Migration regime: Third country					0	.
Free movement					− 0.099	0.369
Sending Country Development: Other					0	.
Advanced					0.729*	
				0.336		
Constant	− 5.494**	1.717	− 4.710	2.408	− 6.113*	2.483
Educational Selection						
	Men					
	1		2		3	
						0.001
						0.038**
	0.006	0.037**	0.007	− 0.006	0.007	
	0.008					
Age	0.115	0.085	0.217*	0.11	0.330**	0.127
		0.133				
Age Squared	− 0.001	0.001	− 0.003*	0.001	− 0.004**	0.001
Number of Children: No Children			0	.	0	.
One Child			0.037	0.286	0.1	0.318
Two Children			− 0.415	0.287	− 0.399	0.327
Three or More Children			− 0.682	0.396	− 0.651	0.438
Spoke English as a child			1.530**	0.229	1.688**	0.263
Marital Status: Single			0	.	0	.
Married or Cohabiting			0.118	0.352	0.064	0.386
Divorced, Separated or Widowed			− 0.303	0.528	− 0.39	0.536
UK Region: North East			0	.	0	.

North West	− 0.553	0.712	− 0.653	0.684	− 0.816	0.669
Yorkshire and the Humber	− 0.833	0.785	− 1.036	0.754	− 1.275	0.777
East Midlands	− 0.467	0.787	− 0.31	0.794	− 0.501	0.76
West Midlands	− 0.66	0.699	− 0.843	0.69	− 1.037	0.679
East of England	− 0.089	0.7	− 0.233	0.681	− 0.439	0.68
London	− 0.227	0.65	− 0.317	0.618	− 0.58	0.608
South East	0.179	0.675	0.045	0.652	− 0.305	0.642
South West	− 0.155	0.703	− 0.164	0.702	− 0.446	0.727
Wales	− 0.156	0.923	− 0.081	0.885	− 0.324	0.898
Scotland	0.006	0.762	− 0.356	0.771	− 0.685	0.778
Northern Ireland	− 0.725	0.956	− 1.072	0.979	− 1.425	1.011
Arrival Cohort: Pre-81	0	.	0	.	0	.
81-90	0.045	0.536	− 0.033	0.65	− 0.131	0.65
91-95	− 0.207	0.611	− 0.283	0.761	− 0.405	0.815
96-03	0.596	0.551	0.509	0.694	0.636	0.692
2004–2008	0.002	0.569	− 0.204	0.723	0.019	0.716
2008–2015	0.612	0.63	0.425	0.796	0.549	0.798
Educational Attainment:			0	.	0	.
University			2.878**	0.529	2.509**	0.534
			0	.	0	.
Some Tertiary			1.558**	0.539	1.343*	0.529
			0	.	0	.
Completed Secondary			0.658	0.484	0.542	0.486
Has UK Credential: no			0	.	0	.
Yes			0.884**	0.281	0.861**	0.286
Migration regime: Third country					0	.
Free movement			− 0.52	0.484		
Sending Country Development: Other					0	.
Advanced			1.360**	0.408		
Constant	− 5.725**	1.875	− 7.764**	2.304	− 8.812**	2.506	− 9.140**	2.627

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance.

Table A7

Full Regression Results on Unemployment

Table A7

Educational Selection	−0.004	0.005	2 −0.003	0.006	0.008	0.008	0.007	0.009
Age	0.019		0.105	0.022	0.121	−0.005	0.116	−0.003	0.118
Age Squared	0		0.001	−0.001	0.001	0	0.001	0	0.001
Number of Children: No Children				0	.	0	.	0	.
One Child				0.088	0.356	0.096	0.342	0.085	0.34
Two Children				−0.139	0.449	−0.145	0.45	−0.156	0.447
Three or More Children				−0.29	0.594	−0.545	0.644	−0.544	0.642
Spoke English as a child				−0.599+	0.313	−0.365	0.34	−0.384	0.357
Marital Status: Single				0	.	0	.	0	.
Married or Cohabiting				−0.144	0.374	−0.254	0.374	−0.305	0.379
Divorced, Separated or Widowed				0.697+	0.406	0.529	0.413	0.476	0.415
UK Region: North East				0	.	0	.	0	.
North West				−1.434	1.095	−1.634	1.107	−1.723	1.083
Yorkshire and the Humber				−0.602	0.733	−0.872	0.724	−0.98	0.702
East Midlands				−1.721+	0.925	−1.960*	0.925	−2.033*	0.914
West Midlands				−0.898	0.874	−1.175	0.853	−1.264	0.839
East of England				−0.616	0.783	−0.778	0.781	−0.884	0.753
London				−0.212	0.645	−0.432	0.64	−0.548	0.603
South East				−0.917	0.748	−1.091	0.757	−1.179	0.726
South West				−1.554	1.171	−1.594	1.146	−1.725	1.137
Wales				−0.491	1.212	−0.614	1.199	−0.703	1.263
Scotland				−1.019	1.175	−1.141	1.157	−1.254	1.215
Northern Ireland				0	.	0	.	0	.
Arrival Cohort: Pre-81				0	.	0	.	0	.
81-90				0.761	0.653	0.95	0.648	0.924	0.648
91-95				0.136	0.834	0.363	0.842	0.292	0.809
96-03				0.111	0.697	0.339	0.697	0.336	0.695
2004–2008				0.294	0.731	0.496	0.764	0.493	0.765
2008–2015				0.441	0.86	0.536	0.901	0.55	0.906
Educational Attainment: Primary or Less						0.405	0.604	0.401	0.61
Some Secondary						0	.	0	.
Completed Secondary				−0.286			0.457	−0.264	0.461
Some Tertiary				−1.181*	0.582	−1.157*	0.588		
Completed Tertiary				−0.809	0.542	−0.791	0.59		
Has a UK credential: no						0	.	0	.
Yes						−0.564	0.563	−0.558	0.571
Migration regime: Third country								0	.

	1		2		3		4	
Educational Selection	0.002	0.006	0.002	0.007	0.027+	0.014	0.019	
Free movement							− 0.449	0.577
Sending Country Development: Other							0	.
Advanced							0.146	0.509
Constant	− 2.846	2.193			− 2.303	2.607	− 1.704	2.492	− 1.539	2.418
Men								
0.013								
Age	0.273+	0.139	0.354*	0.171	0.372*		0.176	0.403*		0.182
Age Squared	− 0.003+	0.002	− 0.003+	0.002	− 0.004*	0.002	− 0.004*	0.002		
Number of Children: No Children			0	.	0	.	0	.		
One Child			− 0.219	0.526	− 0.201	0.521	− 0.212	0.557		
Two Children			0.069	0.491	0.099	0.505	0.116	0.529		
Three or More Children			0.175	0.48	0.031	0.505	0.066	0.524		
Spoke English as a child			− 1.191*	0.475	− 1.030*	0.501	− 0.820+	0.47		
Marital Status: Single				0	.	0	.	0	.	
Married or Cohabiting				− 1.097+	0.577	− 1.234*	0.589	− 1.527*	0.602	
Divorced, Separated or Widowed				− 0.172	0.707	− 0.189	0.75	− 0.425	0.727	
UK Region: North East				0	.	0	.	0	.	
North West				− 0.893	1.052	− 0.748	1.17	− 0.67	1.175	
Yorkshire and the Humber				− 0.957	1.085	− 0.841	1.191	− 0.755	1.195	
East Midlands				− 0.324	1.144	− 0.332	1.243	− 0.206	1.261	
West Midlands				− 0.971	1.017	− 0.955	1.14	− 0.79	1.135	
East of England				− 1.708	1.124	− 1.514	1.213	− 1.3	1.211	
London				− 0.588	0.956	− 0.477	1.067	− 0.314	1.065	
South East			− 2.735*	1.198	− 2.555*	1.278	− 2.236+	1.27		
South West			− 1.697	1.434	− 1.57		1.517	− 1.47	1.563	
Wales			0.245	1.176	0.437	1.315	0.518	1.335		

Table A7

	Women			
	1	2	3	4
Scotland		− 2.148		
	1.368	− 2.058	1.518	− 1.895	1.531	
Northern Ireland		0.661	1.129	1.01	1.258	1.177	1.261
Arrival Cohort: Pre-81		0	.	0	.	0	.

81-90	− 0.258	0.562	− 0.148	0.57	− 0.283	0.554
91-95	− 0.036	0.579	− 0.015	0.593	− 0.197	0.579
96-03	0.076	0.523	0.239	0.517	0.069	0.508
2004–2008	− 0.778	0.627	− 0.402	0.648	− 0.616	0.666
2008–2015	− 0.077	0.878	0.188	0.886	0.23	0.906
Educational Attainment:						
Primary or Less			− 0.273	1.064	− 0.632	1.052
Some Secondary			0	.	0	.
Completed Secondary	− 0.53		0.549	− 0.433	0.57	
Some Tertiary	− 1.662*	0.766	− 1.440+	0.787		
Completed Tertiary	− 1.822*	0.741	− 1.481+	0.771		
Has a UK credential:						
no	0	.	0	.		
Yes					− 0.053	0.48
− 0.049	0.483					
Migration regime: Third					0	.
country						
Free movement					− 1.204	0.89
Sending Country					0	.
Development: Other						
Advanced					− 0.692	0.555
Constant	− 9.723**		− 3.644		− 3.63	
− 3.812						
2.978	9.567**		10.774**		10.730**	

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance.

Table A8

Full Regression Results on ISEI

	Women					
	1		2		3	4
Educational Selection	0.190**	0.03	0.198**	0.032	− 0.073*	0.034
− 0.02	0.038					
Age	0.396	0.659	0.171	0.747	0.347	0.701
0.161	0.689					
Age Squared	− 0.005	0.008	− 0.004	0.009	− 0.004	0.008
− 0.002	0.008					
Number of Children: No Children	0	.	0	.	0	.
One Child	− 2.251	1.962	− 1.14	1.817	− 0.718	1.774
Two Children	− 4.536	2.381	− 1.574	2.272	− 1.032	2.24
Three or More Children	− 3.809	3.66	− 1.286	3.073	− 1.828	3.153
Spoke English as a child	6.588**	1.665	3.945**	1.523	2.316	1.531
Marital Status: Single	0	.	0	.	0	.
Married or Cohabiting	− 3.905	2.12	− 2.325	1.85	− 1.573	1.823
Divorced, Separated or Widowed	− 2.038	2.68	− 0.307	2.364	0.659	2.317
UK Region: North East	0	.	0	.	0	.

North West	− 3.407	9.74	− 0.904	8.557	− 1.132	8.942
Yorkshire and the Humber	− 3.786	9.741	− 1.613	8.588	− 2.214	8.989
East Midlands	− 7.382	9.544	− 4.523	8.361	− 5.118	8.728
West Midlands	− 9.201	9.672	− 4.558	8.411	− 4.769	8.8
East of England	− 3.314	9.447	0.485	8.263	0.181	8.66
London	− 3.734	9.408	− 0.938	8.223	− 1.651	8.622
South East	− 3.608	9.394	− 0.15	8.247	− 1.114	8.659
South West	− 0.374	9.515	0.596	8.35	− 0.305	8.781
Wales	− 2.511	9.763	− 1.414	8.753	− 2.636	9.083
Scotland	− 2.262	10.111	− 0.272	8.776	− 1.493	9.286
Northern Ireland	− 2.324	9.613	− 1.978	8.41	− 3.05	8.775
Arrival Cohort: Pre-81	0	.	0	.	0	.
81-90	2.073	3.977	− 1.495	3.395	− 1.257	3.396
91-95	2.686	4.396	− 0.161	3.879	− 0.924	3.808
96-03	0.949	3.906	− 2.087	3.528	− 1.377	3.47
2004–2008	− 4.266	3.951	− 5.358	3.656	− 4.308	3.595
2008–2015	− 1.15	4.883	− 4.529	4.728	− 3.358	4.727
Number of Hours Worked	0.154*	0.076	0.154*	0.068	0.180**	0.067
Educational Attainment:			−	5.341	− 12.607**	4.849
Primary or Less	15.053**					
Some Secondary			0	.	0	.
Completed Secondary			5.115*	2.474	4.433	2.479
Some Tertiary	8.262**	2.607	6.919**	2.619		
Completed Tertiary	23.050**	2.685	19.881**	2.879		
Has a UK credential: no	0	.	0	.		

Table A8

	Women							
	1		2		3		4	
Migration regime: Third country	0	.						
Free movement					− 0.332	2.343		
Sending Country Development: Other	0	.						
Advanced	6.293**	2.186						
Constant	23.461	13.914	32.729	18.015	28.644	16.223	27.859	16.335
	1		2		3		4	
Men								
Educational Selection	0.313**	0.025	0.276**	0.028	− 0.014	0.032	0.01	0.033
Age	0.81	0.642	1.144	0.809	1.720*	0.766	1.660*	0.758
Age Squared	− 0.009	0.007	− 0.015	0.009	− 0.020*	0.009	− 0.020*	0.009
Number of Children: No	0	.	0	.	0	.		
Children								
One Child	1.206	2.119	1.519	2.005	1.944	1.993		
Two Children	− 2.171	2.069	− 1.82	1.964	− 1.435	1.952		
Three or More Children	− 3.973	2.684	− 3.217	2.47	− 2.662	2.415		
Spoke English as a child	8.325**	1.675	7.863**	1.644	6.819**	1.753		
Marital Status: Single	0	.	0	.	0	.		

Married or Cohabiting	1.945	2.453	1.732	2.438	2.051	2.393
Divorced, Separated or Widowed	− 0.028	3.769	− 0.417	3.466	− 0.359	3.51
UK Region: North East	0	.	0	.	0	.
North West	− 3.313	4.923	− 2.114	4.241	− 2.423	4.232
Yorkshire and the Humber	− 5.158	5.001	− 4.997	4.319	− 5.508	4.314
East Midlands	− 6.103	4.809	− 3.88	4.208	− 4.406	4.201
West Midlands	− 3.349	4.797	− 3.231	4.316	− 3.827	4.289
East of England	− 1.232	4.647	− 0.866	4.148	− 1.498	4.189
London	− 3.612	4.252	− 3.173	3.758	− 3.966	3.752
South East	− 1.841	4.525	− 1.531	3.951	− 2.849	3.945
South West	− 3.92	5.185	− 2.081	4.605	− 2.978	4.735
Wales	− 10.694	6.797	− 8.33	5.224	− 9.171	5.158
Scotland	− 2.005	5.328	− 3.76	4.771	− 4.989	4.746
Northern Ireland	− 3.436	5.734	− 4.668	4.953	− 5.73	5.008
Arrival Cohort: Pre-81	0	.	0	.	0	.
81-90	− 0.647	3.74	− 0.751	3.319	− 0.443	3.358
91-95	− 4.409	4.247	− 4.369	3.933	− 4.003	4.027
96-03	1.177	3.753	0.153	3.457	0.963	3.493
2004–2008	− 4.008	3.919	− 6.311	3.515	− 4.932	3.633
2008–2015	− 1.312	4.362	− 4.376	4.211	− 3.9	4.206
Number of Hours Worked	0.192*	0.079	0.187**	0.071	0.204**	0.071
Educational Attainment:			7.086	4.929	7.16	4.672
Primary or Less						
Some Secondary			0	.	0	.
Completed Secondary			4.723*	1.897	4.228*	1.954
Some Tertiary			6.794**	2.606	6.052*	2.605
Completed Tertiary			22.465**	2.57	20.843**	2.629
Has a UK credential: no			0	.	0	.
Yes			7.298**	1.943	7.309**	1.941
Migration regime: Third country					0	.
Free movement					− 0.178	2.85
Sending Country Development: Other					0	.
Advanced					4.617*	2.19
Constant	4.005	13.459	− 2.148	16.522	− 7.21	15.356	− 8.852	15.462

Source: Understanding Society Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds migration regime and sending country development. * Denotes p-value of < .05 and ** p-value of < .01 for two-sided tests for statistical significance.

Table A9

Questions for the Big 5 Personality inventory

Questions were preceded by this text:"The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'."

Openness	I see myself as someone who has an active imagination.	I see myself as someone who values artistic, aesthetic experiences.	I see myself as someone who is original, comes up with new ideas.
Conscientiousness	I see myself as someone who does things efficiently.	I see myself as someone who tends to be lazy. (reverse coded)	I see myself as someone who does a thorough job.
Extraversion	I see myself as someone who is outgoing, sociable.	I see myself as someone who is talkative. (reverse coded)	I see myself as someone who is reserved.

(continued on next page)

Table A9)

Openness	I see myself as someone who has an active imagination.	I see myself as someone who values artistic, aesthetic experiences.	I see myself as someone who is original, comes up with new ideas.
Agreeableness	I see myself as someone who is sometimes rude to others. (reverse coded)	I see myself as someone who is considerate and kind to almost everyone.	I see myself as someone who has a forgiving nature.
Neuroticism	I see myself as someone who is relaxed, handles stress well.	I see myself as someone who gets nervous easily.	I see myself as someone who worries a lot. (reverse coded)

Table A10

Heterogeneity in the relationship between educational selection and labour market mechanisms

Suest Difference in Coefficients Across Equations, Difference and Standard Error

Respondent Tert - LT Tert	Respondent Respondent UK Cert - No UK Cert	Respondent Respondent Free Mvt - Non-Advanced Sending Country - Free Mvt	Non-Advanced Sending Country - Other
In Work − 0.0034	0.0008 0.0030	0.0049* 0.0023	0.0010 0.0023 0.0061
Logged 0.0189* 0.0072	0.0064 0.0089	− 0.0033 0.0055	− 0.0004 0.0048
Positive Wages			
Professional 0.0045 0.0044	0.0011 0.0035	0.0028 0.0035	− 0.0014 0.0033
Job			
N			

Source: Understanding Society Wave 3. Regressions from model 4 as in Table 3 above. * p-value of .05 and ** p-value of < .01 for two-sided test for statistical significance. 'Tert' stands for tertiary level qualifications and 'LT Tert' for less than tertiary qualifications. 'Advanced' stands for advanced economy versus less economically developed.

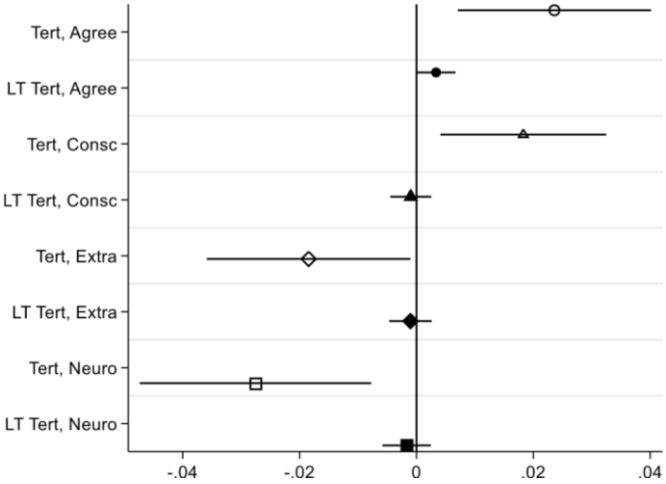

Fig. A1. The relationship between educational selection and agreeableness, conscientiousness, extraversion, and neuroticism, for respondents with tertiary and less than tertiary educationSource: Understanding Society Wave 3. Regressions for tertiary educated and non-tertiary educated separately. Models adjust for age, arrival cohort, English first language, absolute level of education, migration regime and sending country development. 'Tert' stands for tertiary level qualifications and 'LT Tert' for less than tertiary qualifications.

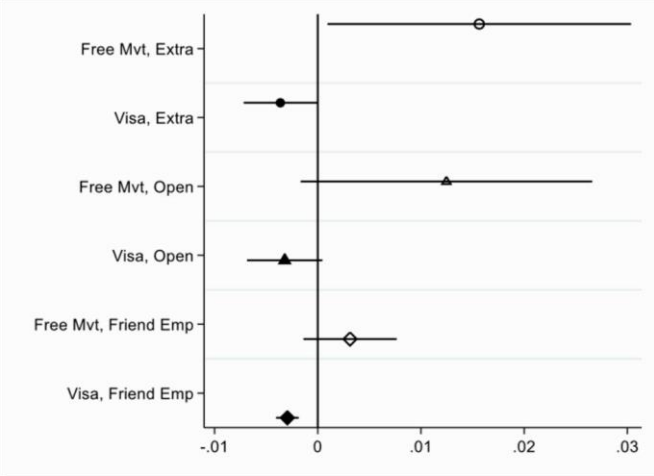

Fig. A2. The relationship between educational selection and openness, extraversion, and proportion friendship network employed, for respondents entering the UK under free movement and those entering as third country nationals Source: Understanding Society Wave 3. Regressions for free movement migrants and those subject to immigration control separately. Models adjust for age, arrival cohort, English first language, absolute level of education, and sending country development

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