The Intergenerational Mobility of Immigrants and the Native-Born: Evidence from Sweden[*]

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Abstract

We use administrative Swedish data to show that, conditional on parent income, immigrant children have similar incomes and higher educational attainment in adulthood than native-born Swedes. This result, however, masks the fact that immigrant children born into poor families are more likely than similar natives to both reach the top of the income distribution and to stay at the bottom. Immigrant children from high-income families are also more likely than natives to regress to the economic bottom. Notably, however, children from predominantly-refugee sending countries like Bosnia, Syria, and Iran have higher intergenerational mobility than the average immigrant child in Sweden.

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1 Introduction

Immigration is an intergenerational process, often driven by parental desire to ensure a better life for subsequent generations and resulting in demographic changes in the host country that play out over numerous generations. In order to construct optimal immigration policy, it is thus important to consider the effects of multiple generations of immigrants on the host country and the effects of the host country on those multiple generations. We focus on the latter in this paper, documenting how immigrant children compare to native-born counterparts and demonstrating heterogeneities in the way immigrant children integrate into a new society. We use income and educational attainment as measures of integration. Understanding these aspects of the immigration process is especially important today, with the world facing over 65 million displaced persons, the largest number on record (United Nations High Commissioner for Refugees 2016).

We might expect intergenerational mobility to be lower for immigrants than for natives if culture, language barriers, or traumatic origin-country experiences impede a child's ability to obtain a good-paying job or an education. It is also possible that state resources or other forms of social support crucial for intergenerational mobility are more easily accessible for natives than for immigrants. Alternatively, if familial characteristics or domestic investment in the child are especially important for intergenerational mobility, it might be that immigrants, many of whom are fleeing their home country in search of a better future for their children, are highly selected on exactly the characteristics that produce higher intergenerational mobility.

Our work investigates the net effect of these forces. We look at how the immigrant experience differs from that of natives using longitudinal data from Sweden, data that allow us to link parents to children over time and follow the children's income and education trajectories. We focus on immigrant children that are born abroad to foreign-born parents and arrive in Sweden before the age of 16.[1] By studying this group, we differ from existing studies on the intergenerational mobility of immigrants, which look at children who are born in the host country to foreign-born parents (see Hammarstedt and Palme (2012), Niknami (2016), and Hermansen (2016), among others). Doing so allows us to work with a sample that more closely resembles the recent refugee waves. Moreover, we are able to see how children who do not spend a significant portion of childhood in Sweden fare compared to those who, along with their parents, are born there. A country that has for decades been accepting large numbers of refugees, family migrants, and workers from all over the world, Sweden provides a useful setting for our analyses. Additionally, our work expands on the existing literature by administratively linking immigrant parents with children and separating out refugees from non-refugees.

We start by documenting striking similarities in income and educational outcomes be-

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1. These are often called the 1.5 generation in the immigration literature (Sweetman and Ours 2015).

tween immigrant and native children. We next zoom in on the immigrant group and find that refugee children from countries like Bosnia, Syria, and Iran have higher intergenerational mobility than the average child immigrant to Sweden. While immigrant parents from these countries on average find themselves with lower incomes than those from other countries, their children show some of the highest levels of income in adulthood among all immigrant children. Still, we find substantial heterogeneity in intergenerational mobility across predominantly-refugee sending countries, revealing the importance of further research to try to understand the mechanisms behind these differences.

Our work stands on the shoulders of an active literature on the intergenerational mobility of immigrants. Focusing on male immigrants who arrive in Sweden before 1970 and their Swedish-born sons, Hammarstedt and Palme (2012) show that the absolute income of these children converges to that of the children of native Swedish fathers. In our sample of immigrants who arrive in Sweden between 1974 and 1999, 21% of children have information on only their mothers, suggesting that looking at parents and children of both genders is important for the full intergenerational mobility picture. We also focus on immigrant children born outside of Sweden, with the goal of raising the bar on the comparison and seeing how those who spend only a portion of their childhood in Sweden do compared to native Swedish children. We measure a child's income when he or she is 30 years old, whereas Hammarstedt and Palme (2012) measure child income in 1997-1999 at ages that range from 20 to 64. Given how variable incomes are across those ages, we argue that our strategy provides a more stable measure of income in adulthood. Similar to us, however, the authors find heterogeneities in income convergence, with children from Turkey, Greece, the Middle East, and Africa displaying the highest earnings gaps relative to natives.

Relatedly, Niknami (2016) looks at how the educational attainment of immigrant and native girls born in Sweden between 1960 and 1980 differs from the educational attainment of their mothers. She finds higher educational intergenerational mobility for girls born to immigrant mothers. The paper complements earlier work by Borjas (1992), Card, DiNardo, and Estes (2000), and Aydemir, Chen, and Corak (2009), who study the relationship between immigrant father earnings and child earnings. They conclude, among other things, that sons of immigrants have earnings in adulthood that closely resemble their father's earnings.

In the Norwegian context, Hermansen (2016) finds evidence of convergence of immigrant children to their native counterparts in terms of absolute income and education. Like us, he sees immigrant children of several non-European ethnic minorities achieve higher educational attainment and earnings than their native counterparts with similar parental socioeconomic backgrounds. Hermansen (2016)'s sample includes children born to foreign-born parents who were either born in Norway or who came to Norway before starting school. Given prior work that shows children moving at earlier ages with higher

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incomes and education levels in adulthood (see Van den Berg et al. (2014) and Chetty, Hendren, and Katz (2016)), we also include children arriving in their teenage years in our sample to ensure a representative picture of immigrant intergenerational mobility.

In the next section we discuss Sweden's immigration patterns since World War II and describe how we selected the data and variables for our analyses. Section 3 dives into the main results, showing how immigrant intergenerational mobility compares to native intergenerational mobility and how immigrant intergenerational mobility differs across countries of origin. Section 4 concludes.

2   Background and data

2.1   Immigrants in Sweden

Sweden has for decades been a destination for large numbers of immigrants with widely different backgrounds, allowing for a rich assessment of the integration process. Since World War II, when Sweden became a net immigrant-receiving country, numerous immigration waves have occurred. The 1950s and 1960s were dominated by labor immigration, primarily from other Nordic countries like Finland, but also from Mediterranean countries like Greece, Italy, and Yugoslavia (Hammarstedt and Palme 2012).

Labor immigration from non-Nordic countries came to a halt in the early 1970s[2], but immigration continued in the form of family reunification and refugee immigration. Refugees from Chile arrived predominantly in the 1970s; from Iran, Iraq, and Lebanon in the 1980s; from Somalia, Eritrea, and Former Yugoslavia in the 1990s. The timing of refugee arrivals has mirrored the timing of conflicts around the world. Given the volume of these refugee waves, 1970 marked a shift in Sweden towards mostly non-European immigration. Our sample, which observes immigrants who arrive in Sweden between 1974 and 1999, shows 76% of foreign-born children with at least one refugee parent. As of 2016, about 17% of the Swedish population was foreign-born, compared to less than 7% in 1970. By comparison, the share of foreign-born in the United States was at about 13% in 2013 (OECD 2017).

2.2   Sample Selection

We use Swedish register data from the GeoSweden database, which covers all individuals with a permanent residence permit valid for at least one year for the 1990-2014 period.[3] The data set contains variables from several different registers, including the education,

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2. Nordic labor immigration continued, primarily from Finland, as the 1954 Nordic Agreement allowed free movement for citizens of the Nordic countries.

3. GeoSweden is administered by the Institute for Housing and Urban Research at Uppsala University. All data is collected and anonymized by Statistics Sweden.

income, and employment registers. Parent identifiers for each individual are available in the data set, provided the parents have also registered in Sweden (either as a resident or as a citizen) at some point between 1990 and 2014.

In order to construct our sample, we first identify all parents of children born in the 1974-1984 cohorts for whom we have information in the population and employment registers. We then identify the children born in the 1974-1984 cohorts who can be found in the population and employment registers when they are 30 years old. For immigrant children, we follow Van den Berg et al. 2014 and impose the restriction that they arrive before the age of 16.[4]

We focus on two groups: the native children in our analysis are children born in Sweden to Swedish-born parents. The immigrant children are born abroad to foreign-born parents. This implies that we exclude children born in Sweden to immigrant parents, children born abroad to Swedish parents, and children born to one Swedish parent and one foreign parent, regardless of the place of birth. Our sample restriction allows us to focus on those immigrant children for whom integration into Swedish society would likely be hardest. This, in turn, likely makes the outcomes in our sample lower bounds for the entire population of immigrant children in Sweden.

We have information on both parents[5] for 97% of native children in our data. However, only 75% of the immigrant children in our sample have both parents in the register. Strikingly, 21% of immigrant children have only their mother in the register and 4% have only their father. The most likely reason a parent is missing from the register is that this parent lives abroad. Additionally, a parent could be missing in the register if he or she is deceased, has only a temporary residence permit - which allows for less than one year of residence in Sweden - or is somehow not registered at all.

2.3   Key Variables

We calculate *family income* as the average combined income[6] of the parents in the register during the years when the child is 15 to 19 years old.[7] We include families with zero income. We follow Chetty et al. 2014 and define the family's *percentile rank* based on its position in the *national* distribution of incomes relative to all parents with children in

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4. The average age at arrival for immigrant children is 9, with a standard deviation of 4 years.

5. We restrict our attention to whether parents are present in the register during the period in which we are interested in measuring parental outcomes - when the child is between 15 and 19 years old. This means that we include children who either had only one parent in the register throughout the whole 5-year period, or who had both parents registered throughout the whole 5-year period. A further implication is that we are not capturing those children whose parents migrate in and out of Sweden during that time.

6. Our income variable includes income from employment and self-employment. Using alternative variables gives us similar results. These are available upon request.

7. When the child has only one parent in the register, we measure family income as the average income of the existing parent during the years when the child is 15 to 19 years old. For the 1974 cohort, we measure family income when the child is between 16 and 20, because our income data starts in 1990.

the same birth cohort, regardless of immigrant status.

We measure *child income* as the individual income the child earns when he or she is 30 years old. Just as for the parents, we define the child's percentile rank based on his or her position in the national distribution of incomes relative to all children in the same birth cohort.

We define *parental education* as the maximum level of education observed throughout the time the parent is in the register, so as to reduce the number of missing values for immigrant parents in their first years in Sweden.[8] We categorize families based on whether neither or at least one parent has a college degree or above.[9] In our data, this corresponds to having at least a post-secondary education that takes fewer than 3 years to complete.[10]

Similarly, we measure whether the child has a *college degree or above* when the child is 30 years old.

We show summary statistics for native and immigrant children in Table 1. On average, immigrants (Panel B) grow up in families that earn less than 40% of what native families earn. Yet, as adults, immigrant children earn about 80% of what average native children earn. The average native parents and children are more likely to have college or above levels of education than the average immigrant parents and children, respectively.

3   Results

3.1   Immigrants vs. Native-born

To better understand how immigrants integrate into Swedish society, we turn our attention to intergenerational mobility. We measure the extent of integration by comparing the outcomes of immigrant children to the outcomes of native-born children from the same birth cohorts and the same family income.

Figure 1 plots the average child income ranks against the parent income ranks, revealing a similar intergenerational income mobility slope of about 0.18 for immigrants and for natives. The ranks of the native and immigrant children born into the bottom of the income distribution are very similar, becoming more varied as we move up the parental income distribution in part because the number of immigrant parents decreases.

These results, however, do not capture what is happening at the extremes. Looking

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8. Immigrant parents might see their skills and degrees obtained abroad recognized some time after arrival.

9. We do so only for families where both parents have non-missing education information when both parents are in the register (or the one existing parent has non-missing information when only one parent is in the register). However, if we assign families the level of education from just one parent when only one parent has non-missing information, the average share of families with college or above changes only slightly, from 42.92% to 42.89% for natives and from 33.75% to 33.07% for immigrants.

10. The equivalent in the United States would be an associate's degree.
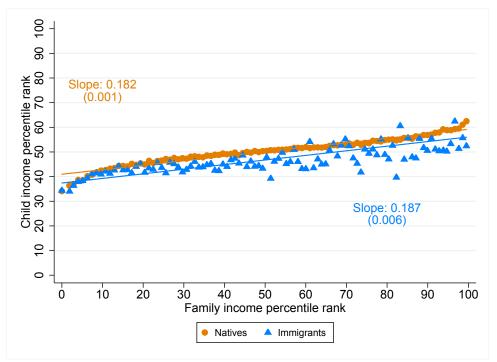
Table 1: Summary statistics

	Mean	Std. dev.	No. of obs.
Panel A: Natives			
Parent family income	230.04	121.13	819,422
Child individual income	236.26	157.72	819,422
Parent percentile income rank	53.52	27.56	819,422
Child percentile income rank	50.72	29.15	819,422
At least one parent with college or above	42.92	n/a	818,014
Child has college or above	48.20	n/a	814,931
Both parents in the register	97.15	n/a	819,422
Only mother in the register	2.27	n/a	819,422
Panel B: Immigrants			
Parent family income	87.44	95.36	53,060
Child individual income	190.37	162.22	53,060
Parent percentile income rank	17.47	21.40	53,060
Child percentile income rank	40.66	30.80	53,060
At least one parent with college or above	33.75	n/a	50,948
Child has college or above	37.34	n/a	52,626
Both parents in the register	75.20	n/a	53,060
Only mother in the register	21.33	n/a	53,060
Average age at arrival	8.94	4.03	53,060
At least one parent refugee	76.29	n/a	44,201

Notes: This table reports summary statistics for natives and immigrants, respectively. Immigrant children are born abroad to foreign parents; native children are born in Sweden to Swedish parents. Children are born between 1974 and 1984. Income is in thousands of 2014 SEK. Child income is individual income measured when the child is 30 years old. Parent family income is the combined income of the parents during the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. A college degree corresponds to having at least a post-secondary education that takes fewer than 3 years to complete. We classify a child as a refugee if at least one of his or her parents is classified as a refugee in our data. Where standard deviations are not reported, the Mean column shows shares.

at a child's probability of ending up in the top income quintile in Figure 2a, we can see that when the parents are in the first half of the income distribution, immigrant children have slightly higher probabilities than native children. At the same time, they are also more likely to end up in the bottom income quintile (Figure 2b), even if they start at high family income levels. This higher likelihood of regression to the bottom of the income distribution echoes findings in Chetty et al. 2018 where the authors look at the United States and find that black children born into high-income families are more likely to fall back into the bottom income quintile than white children.[11]

11. Importantly, as Figure A.1 shows, parental education levels cannot fully explain what is happening at the extremes. The gap between native and immigrant child income percentile ranks is virtually

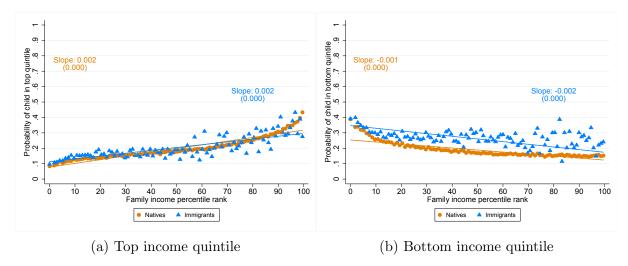Figure 1: Average child income percentile rank, conditional on family income percentile rank

Notes: The figure plots the percentile income rank of children in the 1974-1984 birth cohorts at age 30 against the percentile rank of their parents for natives and immigrants, respectively. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. The slopes are estimated using OLS. Standard errors are in parentheses.

Turning to educational attainment, we can see in Figure 3 that immigrant children are considerably more likely than native children to complete college, especially at the lower parts of the parental income distribution. Our data also show that the share of parents with college degrees at the bottom of the income distribution is higher for immigrant parents than it is for native parents, by somewhere between a few percentage points for the children born in the mid-1970s and as many as 15 percentage points for children born in the mid-1980s. Taken together, these findings suggests a strong familial transmission mechanism of the importance of education that is separate from family income.[12]

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constant across parental education levels, suggesting that other factors are driving immigrant children to be concentrated at the extremes.

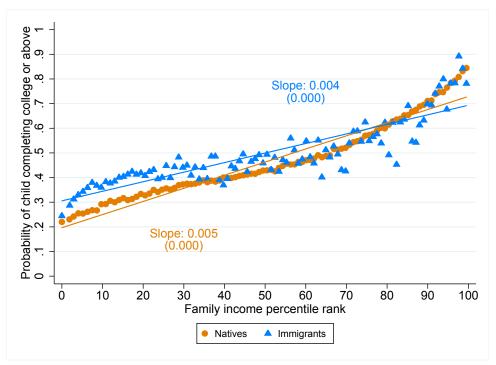12. We see further evidence of this when we condition on parental educational characteristics instead of income characteristics in Figure A.2 and find that immigrant children and native children look similar. Children born into families where neither parent has a college education have about a 35% probability of obtaining a college education themselves, whether they are immigrants or natives. When only their mother has a college degree, that probability rises to about 60% for both groups. The largest gaps in college attainment between immigrants and natives occur when only the father has a college degree (50% for immigrants vs. 60% for natives) and when both parents are college-educated (70% for immigrants vs. 80% for natives).

Figure 2: Average child outcomes, conditional on family income percentile rank

(a) Top income quintile   (b) Bottom income quintile

Notes: Figure 2a (2b) plots the probability of reaching the top (bottom) 20% in the income distribution for children in the same birth cohort, against the percentile income rank of their parents. Probabilities are shown for natives and immigrants. Children are born between 1974 and 1984. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. The slopes are estimated using OLS. Standard errors are in parentheses.

Figure 3: Average share of children obtaining college or above education conditional on family income percentile rank

Notes: The figure plots the probability of children having completed a college degree or above by age 30, against the percentile income rank of their parents. Probabilities are shown for natives and immigrants. Children are born between 1974 and 1984. A college degree corresponds to having at least a post-secondary education that takes fewer than 3 years to complete. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank parents relative to all other parents of children in the same birth cohort. The slopes are estimated using OLS. Standard errors are in parentheses.

Overall, however, whether the outcome of interest is income in adulthood or educational attainment, children of immigrants on average perform similarly or even better than children of natives when we condition on parental income (or, as we show in the Appendix, on parental education). On average, it seems that forces like cultural differences or language barriers or differential access to services, which might be hurting intergenerational mobility for immigrant children, do not outweigh the forces that immigrant parents bring with them to help propel their children upward.

3.2 Country of Origin Differences

The similarities in intergenerational mobility that we uncover between native and immigrant children do, however, mask substantial heterogeneity in immigrants' later-life outcomes. Focusing on income, one such striking dimension along which we can see differences in later-life outcomes is country of origin.

Each circle in Figure 4 represents a different country of origin, with each circle radius equal to the square root of the number of children coming from each country. The y-axis captures the mean child income rank and the x-axis represents the mean parent income rank, both at the country level. The regression line and the estimated slope do not include native-born children, though we do include a circle for Sweden here for perspective. We label the countries representing our largest immigrant groups and some of the outliers.

Most of the refugee-heavy countries of origin are on the far-left of Figure 4, with parents on average starting off in the very bottom ranks of the income distribution. Though they start off at about the same point in the distribution, children from Somalia, Lebanon, Turkey, Iraq, Afghanistan, and Syria have mean income percentile ranks in adulthood that range from 30 to 40. Children from Iran, Bosnia, Former Yugoslavia, and Syria, countries whose vast majority of immigrant children are refugees (see Figure A.3), all have higher intergenerational mobility than the average intergenerational mobility across all immigrant groups.[13]

In contrast, though most of the children from Chile are refugees as well, their parents start off at about the same position in the income distribution as parents of Norwegian children and their intergenerational mobility is below the average across immigrant groups. Thus, not all refugees are the same, and some integrate into Swedish society better than others. We find similar heterogeneities by country of origin when we look at the probability of reaching the top quintile, the probability of ending up in the bottom quintile, and the probability of completing college or above (see Figures A.4 - A.6).

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13. Though Bosnia is also a former Yugoslavian country, it is labeled separately in our data. We maintain that separate labeling here.
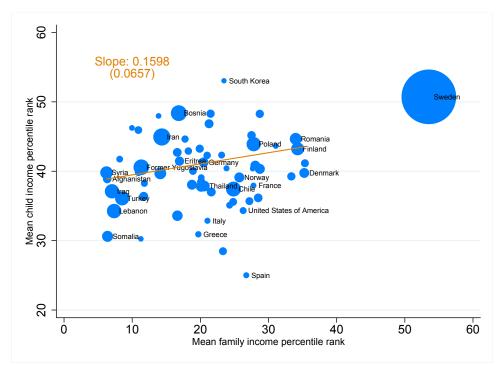
Figure 4: Intergenerational income mobility, by country of origin

Notes: The figure plots the mean child income percentile rank against the mean family income rank, for each country of origin. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. Countries with fewer than 30 immigrant children in our sample are not included. Each circle represents a different country of origin, with each circle radius equal to the square root of the number of children from each country. We include a circle for Swedish children as a point of reference, but the observation is not included in the regression. The slope is estimated using weighted OLS. Standard error in parentheses.

4 Conclusion

We use administrative Swedish data to document that, conditional on parent income, immigrant children have similar incomes to their native-born counterparts. Digging deeper into the conditional expectation, we reveal that immigrant children born into poor families are slightly more likely than native children born into poor families to reach the very top of the income distribution. They are also considerably more likely to obtain a college degree. At the same time, immigrant children are also more likely than native children to stay at the very bottom of the income distribution or to regress from middle and high family incomes to the very bottom.

We show, additionally, that substantial heterogeneities in later-life child outcomes exist depending on the country of origin. Children from predominantly-refugee sending countries like Bosnia, Syria, and Iran have higher incomes and higher intergenerational mobility than the average child immigrant to Sweden. Further research is needed to understand what helps the average immigrant child born into the bottom of the income

distribution do as well as native children, why immigrant children who arrive at middle and high family incomes are more likely than native children to fall back to the economic bottom, and why some refugee children integrate better into Swedish society than other immigrant children.
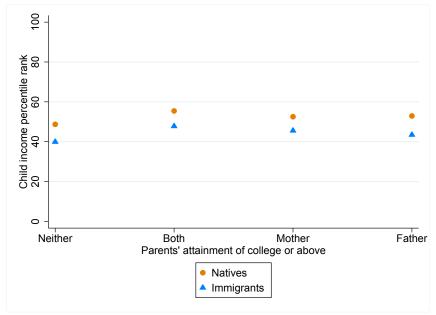
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Van den Berg, Gerard J, Petter Lundborg, Paul Nystedt, and Dan-Olof Rooth. 2014. "Critical Periods during Childhood and Adolescence." *Journal of the European Economic Association* 12 (6): 1521–1557.
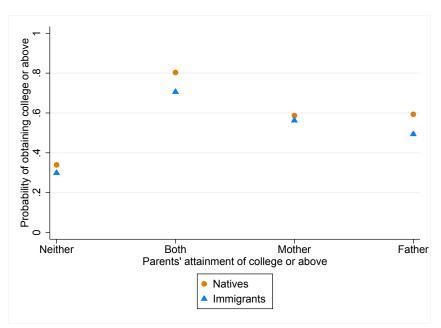
A   Appendix

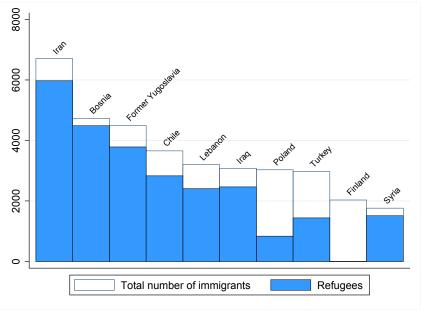Figure A.1: Average child income percentile rank, by family education

Notes: The figure plots the average child income percentile rank by family education. Children are born between 1974 and 1984. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. A college degree corresponds to having at least a post-secondary education that takes fewer than 3 years to complete.

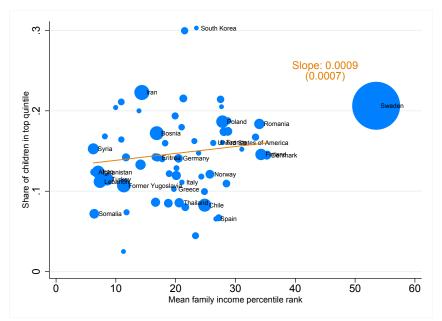Figure A.2: Average share of children obtaining college or above education conditional on parents' education

Notes: The figure plots the mean child probability of completing a college degree or above by family education. Children are born between 1974 and 1984. A college degree corresponds to having at least a post-secondary education that takes fewer than 3 years to complete.

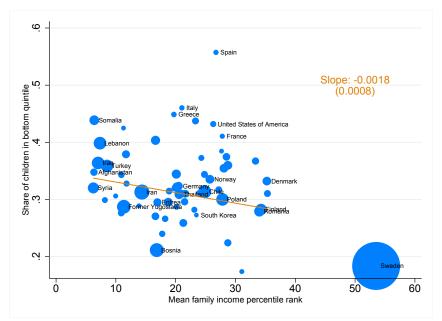Figure A.3: Top ten countries of origin for immigrant children, with refugee share

Notes: The figure plots the top ten countries of origin for immigrant children in Sweden and shows the share of refugees coming from each country. We classify a child as a refugee if at least one of his or her parents is classified as a refugee in our data. The information on residence permits is missing for some parents (see Table 1).
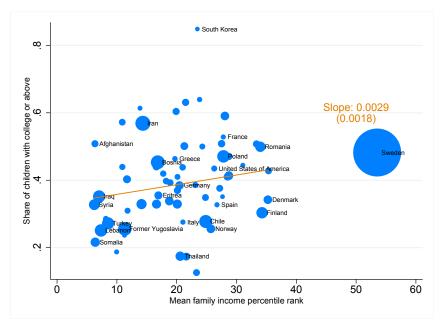
Figure A.4

Notes: The figure plots the mean child probability of reaching the top 20% in the income distribution for children in the same birth cohort, against the mean family income rank, for each country of origin. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. Countries with fewer than 30 immigrant children in our sample are not included. Each circle represents a different country of origin, with each circle radius equal to the square root of the number of children from each country. We include a circle for Swedish children as a point of reference, but the observation is not included in the regression. The slope is estimated using weighted OLS. Standard error in parentheses.

Figure A.5

Notes: The figure plots the mean child probability of reaching the bottom 20% in the income distribution for children in the same birth cohort, against the mean family income rank, for each country of origin. Child income is individual income at age 30. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank children relative to all other children in their birth cohort. We rank parents relative to all other parents of children in the same birth cohort. Countries with fewer than 30 immigrant children in our sample are not included. Each circle represents a different country of origin, with each circle radius equal to the square root of the number of children from each country. We include a circle for Swedish children as a point of reference, but the observation is not included in the regression. The slope is estimated using weighted OLS. Standard error in parentheses.

Figure A.6

Notes: The figure plots the mean child probability of completing a college degree or above, against the mean family income rank, for each country of origin. Children are born between 1974 and 1984. A college degree corresponds to having at least a post-secondary education that takes fewer than 3 years to complete. Parent family income is the average family income over the period when the child is between 15 and 19 (between 16 and 20 for the 1974 cohort). We rank parents relative to all other parents of children in the same birth cohort. Countries with fewer than 30 immigrant children in our sample are not included. Each circle represents a different country of origin, with each circle radius equal to the square root of the number of children from each country. We include a circle for Swedish children as a point of reference, but the observation is not included in the regression. The slope is estimated using weighted OLS. Standard error in parentheses.