

Slipping through the Cracks of a Welfare State? Children of Immigrants in Finland*

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Abstract: We show that children of immigrants living in Finland have lower educational attainment and are more likely to be sentenced of a crime than children of natives. However, despite their higher self-reported mental health problems, they are less likely to use psychotropic medication. Conditioning on parental income and other background variables reduces or reverses the gaps in education and crime, but increases the difference in the use of medication. These results are consistent with the hypothesis that institutions designed to help disadvantaged natives do not fully reach the children of immigrants.

Keywords: children of immigrants, second-generation immigrants, education, crime, health.

JEL codes: I14, I21, J15.

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1 Introduction

This paper examines how children of immigrants cope in early adulthood in Finland. Our primary purpose is to establish a set of facts that are directly relevant for policy and that can be used as a basis for future research. In addition, we suggest a possible interpretation for our results and compare them with those from other countries.

We start by documenting average outcomes of young adults by their parents' immigrant status. The differences are dramatic. For example, at the age of 23, less than half of those with parents from developing countries have completed a secondary degree (in comparison to 85% among the children of natives). They are three times more likely to have been sentenced for a crime than children of natives. Differences between the offspring of natives and immigrants from the OECD area and from the former Soviet Union are qualitatively similar, but smaller in magnitude. Interestingly, however, children of immigrants from all source areas are less likely to use psychotropic medication or to be prescribed medication for severe illnesses than children of natives.

A potential explanation for these raw differences is that immigrants are poorer and live in worse neighborhoods than natives. We examine this possibility by comparing individuals who grew up in the same locations and in families that have similar household structure, parental income and parental employment rates. Conditional on these background characteristics, a parent's immigrant status is not associated with lower educational attainment or higher conviction rates for the children of immigrants from OECD countries or the former Soviet Union. In fact, their offspring are more likely to be enrolled in college than children of comparable natives. However, large gaps remain for children of immigrants from other regions. Furthermore, conditioning on background characteristics only increases the differences in the use of medical services for all immigrant groups.

These results are consistent with the hypothesis that immigrants' offspring, particularly those from poor countries, do not fully benefit from policies designed for disadvantaged natives. As we discuss in more detail in the conclusions, this interpretation builds on the observation that immigrants' children are less likely to make use of public services requiring institutional knowledge. In particular, they are less likely to use medical services despite survey evidence suggesting that their health is similar or worse than the health of natives (Castaneda et al. 2012; Matikka et al. 2015). We stress that while this interpretation is consistent with the patterns observed in our data, it is based on purely descriptive analysis and we cannot rule out some other possible explanations. Thus it should be understood as a working hypothesis that we hope will be tested in future research using appropriate research designs.

This paper adds to the growing literature documenting the outcomes of immigrants' children.¹ Broadly, our contribution is twofold. First, we seem to be the first to document enrollment into college, criminal sentences and the use of medical services among the children of immigrants living in Finland. Second, we study outcomes from several domains using identical methodology. We return to the previous literature and our contribution in more detail in Section 4.

We proceed as follows. The next section provides a brief introduction to Finland's immigration experience. Section 3 discusses our data and measurement approach. Section 4 reports our results and discusses how they compare and add to the previous literature. We conclude with a discussion of the potential interpretations of our results and their implications for public policy.

¹ See Dustmann et al. (2012) and Schnepf (2007) for a review of studies on the educational achievement and attainment of immigrant children; Molcho et al. (2010), Pfarrwaller and Suris (2012) and Stevens and Vollebergh (2008) for surveys of the literature on the health of immigrant children; and Bersani (2014), Junger-Tas et al. (2010, 2012), Killias (1989), Salmi et al. (2015) and Waters (1999) for surveys of the literature on crime and delinquency among immigrant youth. Borjas (2014) and Kerr and Kerr (2011) provide surveys on the broader economics literature on immigration.

2 Institutional context

Finland presents an interesting setting to study the integration of the children of immigrants due to its remarkable track record in providing opportunities for children growing up in disadvantaged families. Finland has one of the world's highest rates of intergenerational mobility (Corak 2013; Jäntti et al. 2006) and the PISA assessments have consistently shown that Finland combines high average test scores with a weak relationship between students' family background and performance (OECD 2013a). The Finnish government has relied on universal policies, i.e. there are virtually no policies specifically targeted at the children of immigrants.

On the other hand, Finland also has a relative short recent immigration history and immigrants living in Finland have low average earnings and high welfare dependency rates (Sarvimäki 2011). For most of the post-WWII period, Finland has been an emigration country, where immigrants were primarily return migrants and their family members. Finland became a destination country for immigrants only in the early 1990s. Figure 1 illustrates the pace of this change by plotting the number of children with foreign-born parents living in Finland in 1987–2012. Our analysis focuses on the children of immigrants who arrived before 2000, i.e. during a period when the immigrant population remained small. In 2008, when we measure the outcomes of our youngest cohorts, the population share of immigrants was 3.6%.

The share of economic migrants in Finland has been low. Furthermore, a large share of the arrival cohorts we examine arrived during an exceptionally severe recession in the early 1990s. These factors are reflected in the low initial employment rates and income of adult immigrants. The gaps decreased over time, but only the earnings of men from the OECD countries converged to the earnings of comparable natives in the first two decades living in Finland (Sarvimäki 2011).

3 Data and Measurement

3.1 Data Sources, Sample and Definitions

Our data are drawn from several administrative registers that are linked together at Statistics Finland.² We have access to a 20 % random sample of the population born between 1967 and 1990. We focus on individuals who were born between 1975 and 1985 and immigrated to Finland before the age of 15 (including those born in Finland). This focus is motivated by two factors. First, there were hardly any children of immigrants in the data born before 1975. Second, the last cohort for whom we observe all the outcome variables at the age of 23 was born in 1985. Furthermore, we restrict the sample of children to those living in Finland each year between the ages of 15 and 23 in order to exclude temporary migrants.

We define “parents” as adults who are first observed in the same household as the individuals we study (henceforth “the children”) and group the children into five categories based on the origin of their parents:

- i) Children with native parents
- ii) Children with an immigrant and a native parent
- iii) Children with parents from OECD countries
- iv) Children with parents from the former Soviet Union
- v) Children with parents from other regions.

We use the mother’s immigrant status if we observe her before or at the same time as the child’s father. Otherwise, we use the father’s immigrant status. Individuals with no observed parents are excluded from the sample. The immigrant categories are defined based on country of birth and registered language (see the Appendix for details).

² The most important administrative registers are the Population Register, the Register of Educational Qualifications and Degrees, the Register of Recidivism, Statistics on Reimbursements for Prescription Medicines and Statistics on Reimbursement Entitlements in respect of Medicines.

3.2 *Background Variables*

Table 1 presents averages of the background characteristics for the five categories of children defined in the previous section. We measure these characteristics in the year the children turn 15 years old. At this age, they are in the last year of compulsory education and hence are still living with their parents.

Table 1 shows that children of immigrants grow up, on average, in households with low incomes and low parental labor market attachment.³ They are also more likely to live in urban areas and single-parent households. The differences, in comparison to natives, are smallest in families where one parent is a native and the other is an immigrant and greatest among parents from the “other regions”. We do not report the education of the parents (or control for it in our regressions), because education obtained abroad is poorly measured in our data.⁴

Importantly, our definition of immigrants’ children includes both those born in Finland and those who moved to Finland before the age of 15. Figure 2 shows that, in fact, most of the children in our sample immigrated between ages 7–15. Thus it is important to bear in mind that the majority of the individuals are not second-generation immigrants.

3.3 *Measurement and Outcomes*

We measure differences in the outcomes of immigrants’ children relative to native children in early adulthood using a linear probability model

$$Y_i = \alpha + I_i\beta + X_i\gamma + \eta_i + \mu_i + \varepsilon_i$$

³ For comparison, Appendix Figure A2 presents the decile distribution of children under 18 years old by their native tongue and family’s disposable money income in 2012 using data for the full population. While approximately 18 % of native families with children fall into the two lowest deciles, the respective share of immigrant families with children is nearly 60 %.

⁴ The Register of Educational Qualifications and Degrees has comprehensive coverage only of degrees attained in Finland. Some degrees of immigrants are recorded in this register via the employment services, but the recording of this information is incomplete and available only for selected groups of immigrants.

where Y_i is the outcome of interest for individual i at age 23, I_i is a vector of indicator variables for parents' immigrant category, X_i is a vector of background characteristics measured at age 15, η_i is a vector of indicator variables for the year of birth, μ_i is a vector of indicator variables for the place of residence at age 15, and ε_i is an error term. We report estimates for the baseline specification controlling only for the individual's year of birth and another specification controlling for the place of residence and the socioeconomic background characteristics discussed in the previous subsection. The standard errors are clustered at the place of residence level.

We measure all outcome variables at age 23 in order to give each birth cohort a similar "at risk" period. The outcomes are categorized into three domains: education, crime and health. Education is measured with indicator variables for individuals (i) with a secondary degree and (ii) enrolled in college (or with a college degree). Crime outcomes are measured as indicator variables for (iii) having been sentenced to fines, and (iv) having been sentenced to unconditional imprisonment, community service or conditional imprisonment. The health measures are indicators for (v) having been prescribed medication for a severe illness and (vi) having used psychotropic medication for mental illness. We discuss the precise definition and interpretation of these outcomes in the next section and in the Appendix.

We do not examine employment or earnings, because a large proportion of Finnish youth are still in education at the age of 23. Thus income and employment at this age are unlikely to provide a good proxy for their future labor market potential.

Our choice of outcome variables is motivated by previous research. In addition to being of independent interest, these variables are likely to be strongly correlated with lifetime income as well as broader definitions of welfare and social inclusion. The positive association between education and future labor market success is particularly well-

established (e.g. Card 2001), and a long line of research has shown education to be positively associated with increased life expectancy and decreased mortality risk (e.g. Hummer and Lariscy 2011; Kitagawa and Hauser 1973; Preston and Elo 1995). Physical and mental health in youth is also strongly associated with educational attainment, earnings, wealth and labor supply in adulthood (e.g. Case et al. 2005; Currie et al. 2010; Lundborg et al. 2014; Smith 2009; Smith and Smith 2010). Furthermore, detention in youth is associated with recidivism, increased probability of dropping out of school, and lower labor market performance (see e.g. Holman and Ziedenberg 2006 for a meta-analysis for the U.S.).

Table 2 shows that the outcome variables are also strongly associated with income in our data. We examine these associations using data on natives born between 1975 and 1985 and regressing their log income at age 30 on the outcome variables.⁵ The estimate from a bivariate regression reported in column 1 shows that individuals with a secondary degree earn 0.43 log points more than those without a secondary degree. Similarly, the crime and health outcomes are strongly negatively associated with income. Furthermore, estimates from a multivariate regression reported in column 7 show that while the outcome variables are correlated with each other (see Appendix Table A1), they also have independent predictive power for income (with the exception of being sentenced to fines).

4 Results

Tables 3-5 report our main results. In each table, we first report the sample average of the outcome by parents' immigrant status and then estimates from a linear probability model for parents' immigrant status (using natives as the omitted category). The first specification controls only for the year of birth indicators. In the second specification, we also control for indicator variables for parents' months of employment, the sum of parents' labor earnings,

⁵ Income measured in the early 30s is found to be a reasonable proxy for lifetime income in the U.S. (Haider and Solon 2006) and in Sweden (Böhlmark and Lindquist 2006).

age of the mother and the father, number of children in the household and the place of residence (see the Appendix for details). All control variables are measured at the year when the child turned 15 years old.

4.1 Education

Table 3 reports the results for our educational outcomes. We start with the likelihood of holding a secondary degree at age 23. These degrees are granted by general upper secondary schools (“academic track”) and vocational upper secondary schools. Most 16-year-olds enroll into one of these institutions after completing the obligatory nine-year comprehensive school, but only 85% of the children of natives in our sample graduated. Failing to complete a secondary degree is a strong predictor of low income, high unemployment probability, and poorer level of housing.⁶ Thus failing to obtain a secondary degree can be interpreted roughly as dropping out from high school in the U.S. context.

The baseline estimates show that all groups of immigrants’ children are less likely to graduate from secondary school than natives. The gap is particularly large – 36 percentage points – for children whose parents come from “other regions”. Once we condition for background characteristics, children with parents from OECD countries is no longer statistically significantly different from the children of natives. Furthermore, children of immigrants from the former Soviet Union are *more* likely to obtain a secondary degree than children of comparable natives. However, an 18 percentage points gap remains between the offspring of non-OECD immigrants and natives even conditional on these background characteristics.

⁶ In the whole population, the unemployment rate among those with no qualifications was 15.9%, compared to the national average of 8.2% in 2013. Aro (2009) examines several measures of wellbeing by educational level among Finnish 30-39-year-olds and finds that those with no secondary degree in 2000 have higher job uncertainty and a level of unemployment over five times higher than those with a college degree. They are also more than twice as likely to be below the poverty line (defined as having earnings less than 50% of the median), and are three times more likely to live in overcrowded dwellings with poor amenities.

The remaining part of the table examines the likelihood of starting college by the age of 23. In Finland, college education is provided by universities and universities of applied sciences (also known as polytechnics). Holding a college degree is associated with substantially higher lifetime income (Koerselman and Uusitalo 2014), better self-rated health and lower incidence of longstanding limiting illness (Laaksonen et al. 2005; Lahelma et al. 2004), and lower mortality and lifespan variation (Elo et al. 2006; van Raalte et al. 2011). We focus on enrollment in higher education rather than graduation, because most Finns holding a degree had not yet graduated by age 23.

The baseline results show that children of immigrants tend to be less likely to continue to college than children of natives. However, once we control for their background characteristics, children of immigrants from the OECD countries and the former Soviet Union are 7–8 percentage points *more* likely to have started college education than children of natives growing up in similar circumstances. In contrast, a negative five percentage point gap remains between children of natives and immigrants from other regions even after conditioning on background characteristics.

Our results are in line with previous work. Kilpi-Jakonen (2011) finds that children of immigrants are less likely to continue to upper secondary education than natives.⁷ Furthermore, earlier work has shown that immigrant students perform worse than non-immigrant students in the 2012 PISA assessment (OECD 2013b). However, controlling for socioeconomic background such as parental education and income partly mitigates these differences in both studies. Our results complement these earlier results by following students through their post mandatory education and documenting their educational attainment in early adulthood. This distinction is important in the Finnish context, because the most

⁷ For a European comparison, see e.g. Algan et al. (2010), Bratsberg et al. (2012), Jackson (2012) and van Ours and Veenman (2003).

important reason for not completing an upper secondary degree is dropping out from high school or vocational training, while most students start in one of such programs (see above).

In comparison to results from Norway – a country with a fairly similar educational system – our findings are qualitatively similar, but quantitatively different. Bratsberg et al. (2012) find that foreign-born children of immigrants from non-OECD countries are on average 16.6 percentage points less likely to complete upper secondary education in Norway. Using the same immigrant group categorization and a similar specification, we find a 22.9 percentage points gap in our sample. Controlling for parental earnings in the Norwegian context reduces the gap to 7.6 percentage points. Using a roughly similar specification, the gap decreases to just 17.5 percentage points in our sample. While we are not able to exactly replicate the specification used by Bratsberg et al. (2012), these results suggest that the children of non-OECD immigrants fare worse in Finland than in Norway.⁸

Our results are also qualitatively similar to findings from the United States. Perreira et al. (2006) find that those immigrating as children are on average more likely to drop out of high school than natives. On the other hand, Keller and Tillman (2008) and Glick and White (2004) find that children of immigrants are more likely to be enrolled in post-secondary institutions than the children of natives, and this result also holds after conditioning on socioeconomic background and family structure.

4.2 Criminal sentences

Table 4 reports the results for criminal sentences. Our first outcome in this analysis is an indicator for the individual having been sentenced to fines by the District Courts and the Courts of Appeal. This measure excludes petty crime such as minor traffic offences or shoplifting, which incur on-the-spot fines or a summary penal order by the police. The most

⁸ Our specification differs from Bratsberg et al. (2012) in that they distinguish between immigrant children born in the host country and abroad, and control for average annual changes in the association of immigrant background for these two groups. They also control for the exact birth country of the child.

common type of crime leading to fines in our data are traffic offences such as aggravated endangering of traffic safety and drunk driving.

The baseline results show that all groups of children of immigrants are more likely to be sentenced to fines than the offspring of natives. Again, the difference is particularly large for the “other regions”. While a tenth of the children of natives have been sentenced to fines by age 23, the corresponding share is almost a quarter for individuals whose parents come from outside of the OECD area and the former Soviet Union. Similarly to our results for education above, controlling for background characteristics reduces the gap by more than half. Furthermore, we find no statistically significant difference between children of natives and children of immigrants from the OECD countries and from the former Soviet Union once we condition on socioeconomic background. However, the difference remains statistically significant for the other two groups.

Our second measure of criminal sentences is an indicator of having been sentenced to conditional imprisonment, community service or unconditional imprisonment.⁹ The most common types of crime leading to community service or conditional imprisonment are traffic offences and offences against property, including aggravated theft, robbery, damage to property, and fraud. Almost half of the sentences leading to unconditional imprisonment were due to offences against property.

The results show that young adults whose parents are from the “other regions” are more than three times as likely to have been sentenced for such more serious crimes than the offspring of natives (13 % vs. 4 %). The difference is also statistically significant for the children of immigrants from the former Soviet Union. Conditioning on other background

⁹ Sentences of imprisonment not exceeding two years may be imposed conditionally, meaning that enforcement is suspended for a probation period of at least one year and at most three years. Community service can be imposed instead of unconditional imprisonment if the sentence does not exceed eight months. Among those sentenced to one of these sanctions in our data (4 % of the sample), three quarters of instances are sentences to either unconditional imprisonment (62.6 %) or community service (12 %), and a quarter to unconditional imprisonment.

characteristics reduces the gaps, and the difference is no longer statistically significant for the former Soviet Union. Furthermore, conditional on socioeconomic background, children of immigrants from OECD countries are less likely to have been sentenced to imprisonment or community service than children of natives. However, even conditional on socioeconomic background, children of immigrants from “other regions” are more likely to have received such sentences than the children of natives.

In order to interpret the results correctly, it is important to note that our results do not provide information about the possible similarities or dissimilarities in the type of crime committed by different groups. Moreover, the differences in sentence prevalence that show up in official statistics may not only depict the underlying crime rates, but also differential treatment within the justice system. In their overview, for example, Junger-Tas and Marshall (1999) point out that for some immigrant groups, studies of self-reported crime often do not display equally large differences in the prevalence of crime between immigrants and natives as conviction rates do. On the other hand, the validity of self-reported data may also vary across ethnic groups (e.g. van Batenburg-Eddes et al. 2012).

Our findings are roughly in line with previous criminological research on immigrant youth in Finland. Employing data on self-reported delinquency, Salmi et al. (2015) find that several forms of delinquency, violent behavior and in particular drug use are more prevalent among immigrant than native youth at ages 12–13 and 15–16. In contrast to our results, however, Salmi et al. (2015) find that controlling for family structure and social disadvantage is only modestly relevant in narrowing the difference.¹⁰ Our results complement this work by documenting differences in criminal sentences at age 23. While we cannot directly compare our results to those reported by Salmi et al. (2015) due to the differences in age when our

¹⁰ Salmi et al. (2015) argue that this may be due to the fact that their measures of socioeconomic status are based on self-assessment by the respondents, or due to problems in disentangling social disadvantage from ethnic background.

outcomes are measured, their results suggest that the differences in criminal sentences are not, at least entirely, driven by differential treatment in the Finnish justice system.

In comparison to other European countries, our findings are qualitatively and quantitatively similar. Hällsten et al. (2013) find that first-generation male immigrants living in the Stockholm metropolitan area are three times as likely to have been sentenced to prison by age 28–31 than native men. They attribute 39–88% of this gap to differences in socioeconomic background and neighborhood characteristics. Kardell and Carlsson (2009) find an overrepresentation of immigrants and their descendants in conviction rates in Denmark, Norway and Sweden. Furthermore, studies from Switzerland and Norway based on self-reported crime data report a higher prevalence of some types of delinquency among immigrant youth (Killias 2009; Torgersen 2001). Skardhamar et al. (2014) show that the general patterns of violent and property crime of several immigrant groups in Finland and Norway are very similar: there is considerable heterogeneity in the level of crime between immigrant groups, but their ranking order in the two countries is very similar.

Interestingly, European findings, including ours, stand in stark contrast with research examining the United States. Rumbaut et al. (2006) find that the native-born incarceration rate was fourfold in comparison to foreign-born among 18-39 men, and that the gaps were present for every ethnic group examined. Using data on self-reported offending among 12–16-year-olds, Bersani (2014) finds that the involvement of foreign-born persons in crime is much lower compared to their second-generation and native-born counterparts. Furthermore, the rates of delinquency, crime and incarceration among the children of immigrants appear to converge to the level of native offspring with each successive immigrant generation (see e.g. Bui 2009; Morenoff and Astor 2006).

4.3 Medical services

Table 5 reports the results for our measures of the use of medical services. We first examine whether the individual has been prescribed medication for a severe illness by the age of 23. This outcome is constructed using decisions of the Social Security Institution of Finland, which grants entitlements to higher rates of reimbursement for medicines used for treating some severe and chronic illnesses. The most common diseases include diabetes, epilepsy, severe mental disorders, various cancers and malign tumors, and behavioral disorders related to mental/intellectual disabilities. Importantly, we do not necessarily measure differences in the underlying health, but rather the combination of health and the capability (or willingness) to make one's way through the application process.

The point estimates suggest that all groups of immigrants' children are less likely to have a diagnosis of severe illness than native children. However, the difference is statistically significant only for children whose parents are from outside the OECD countries or the former Soviet Union. When we account for socioeconomic background, the differences to natives increase slightly and become significant among children with parents from the former Soviet Union and other regions. The 2–3 percentage point difference is large given that 4% of the children of natives have been prescribed medication for a severe illness.

We also examine an indicator for having used psychotropic medication such as antipsychotics, neurosis medication, sleep medication, antidepressants, and central nervous system stimulants by the age of 23. Our data are based on reimbursement from the Social Security Institution of Finland after the purchase of such medication. Again, this measure should be interpreted as the person receiving help for mental health problems through the Finnish medical services rather than a direct measure of mental health.

We find that young adults both of whose parents are immigrants are much less likely to use psychotropic medication than the children of natives. These differences are statistically

highly significant and become larger when we control for socioeconomic background: native children growing up in similar circumstances are more than twice as likely to have been reimbursed a drug primarily designed for mental health problems.

It is important to note that these results are consistent with several interpretations. First, according to the healthy migrant hypothesis, immigrants may be a positively self-selected subpopulation of their source countries in terms of their health (e.g. Antecol and Bedard 2006). Alternatively, the lower share of those receiving reimbursements can also be a sign of difficulties in accessing health services among immigrants, perhaps for language reasons or lack of institutional knowledge (e.g. Derose et al. 2007; Mladovsky 2007). Furthermore, it is possible that there are cultural differences in how illnesses, especially mental disorders, are perceived and how or whether they should be treated (e.g. Cauce et al. 2002; Lindert et al. 2008).

The most comparable previous results for Finland come from surveys on middle school students, which suggest that children of immigrants are more likely to experience adverse health symptoms (e.g. fatigue, headaches and anxiety) than the children of natives. Moreover, compared to other youth, first-generation immigrant children in particular report more difficulties in getting access to a school nurse or social worker (Matikka et al. 2015). Furthermore, Castaneda et al. (2012) report that adult immigrants from selected source countries demonstrate more symptoms of depression and anxiety than the native population. Nevertheless, Gissler et al. (2006) find that 15–64-year-old immigrants are less likely to use primary health care services or to visit a hospital than natives of the same age and gender. We complement this literature by providing the first documentation of the use of prescription drugs among children of immigrants. Together, these results suggest that immigrants use less medical services than natives with similar underlying health.

Research on the use of health care services by immigrant and native youth in other countries is fairly sparse and inconclusive. Using data from a cross-national survey on school-aged children, Molcho et al. (2010) do not find significant differences in most countries between the children of immigrants and natives in terms of self-reported health or life satisfaction once gender, age and family affluence are taken into account. In their meta-analysis of the mental health of migrant children, Stevens and Vollebergh (2008) do not find evidence of an increased risk of mental health problems among children of immigrants. However, given the differences in terms of methodology and the type of data, it is hard to provide informative comparisons between the existing literature and our findings.

5 Conclusions

This paper showed that, at early adulthood, children of immigrants living in Finland have obtained less education, are more likely to have been convicted of a crime and use less medical services. The differences are large, particularly for the children of non-OECD immigrants.

These results are consistent with at least two alternative interpretations. One possibility is that the differences in outcomes simply reflect differences in the underlying characteristics. That is, children of immigrants would be healthier, but have a lower academic aptitude and a higher propensity to commit crimes than children of natives. An alternative interpretation is that they “slip through the cracks” of the welfare state in the sense that Finnish institutions are not providing them similar opportunities as for natives’ offspring.

We recognize the limitations of descriptive analysis in distinguishing between potential mechanisms. Nevertheless, we argue that an institutional explanation has sufficient merit to be considered a plausible working hypothesis. We reach this conclusion primarily by considering how underlying characteristics turn into outcomes recorded in our data. In order

to get a degree, one needs to have sufficient academic or vocational aptitude, but also to work through the school admission process and later studies. Someone suffering from mental health problems will be reimbursed for buying psychotropic medication only if she is willing to get the medication and if she knows how to gain access to it through the health care system. In contrast, the justice system is designed to actively reach those who have committed crimes (despite their presumable attempts to the contrary). Thus our results are in line with the hypothesis that children of immigrants have less institutional knowledge or less willingness to use public services than children of natives.

An additional argument supporting the institutional explanation is that our outcome variables are strongly correlated with each other. In particular, the use of psychotropic medication predicts criminal sentences and leaving the educational system without a secondary degree. These associations are present among the children of both natives and immigrants, though they are smaller for the latter group (see Appendix Table A1). Thus it would be surprising if children of immigrants simultaneously had less mental health problems and a higher underlying propensity to commit crimes and lower educational outcomes.

Our results suggest that policies designed to help immigrants to make better use of the host country's institutions – or adaptation of these institutions to better reach people with an immigrant background – could have substantial impacts. Again, descriptive analysis is not sufficient for testing this hypothesis or to give guidance on how such policies should be designed. Thus evaluations of past policy reforms and experimentation with new policies would be particularly promising avenues for future research.

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Table 1. Background characteristics

	Native	Immigrant-native	OECD	Former Soviet Union	Other regions
Parents' months of employment	9.6	8.6	7.6	5.1	3.5
Parents' combined taxable labor income (2012 euros)	50,455	48,210	31,125	23,184	16,590
Disposable household income (equivalence scaled)*	14,072	13,589	9,831	8,976	7,935
Mother's age	42.7	42.8	41.0	40.7	40.4
Father's age	44.8	46.0	44.2	42.4	44.5
Mother present in household					
... when the child is 15	98.8	98.2	89.2	91.9	88.2
... ever	99.6	100	99.0	99.5	98.0
Father present in household					
... when the child is 15	91.2	98.2	78.4	70.9	76.2
... ever	95.8	100	95.1	84.9	88.2
Number of under-aged children in same household	2.1	2.0	2.3	1.8	3.3
Living in urban areas, %	63.6	77.5	87.3	83.8	88.4
Age at arrival	0.0	2.4	6.7	10.7	10.2
Born in Finland, %	100.0	64.7	25.4	3.0	3.4
Number of children	138,290	1,353	102	629	500

Notes: All averages are based on observations for the year the individual turned 15 years old, and are based only on those parents for whom we actually have an observation of the variable. * Data on household's disposable money income is available only from 1995 onwards. To compare the income of households of different size and structure we use the OECD's adjusted consumption unit scale, which assigns weight 1 to the first adult of the household, weight 0.5 to over 13-year-olds, and weight 0.3 to 0-13-year-old household members.

Table 2. Association between the outcome variables and log earnings at age 30

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Secondary degree	0.43** (0.01)	.	.	.	.	.	0.27** (0.01)
College	.	0.29** (0.01)	.	.	.	.	0.21** (0.01)
Sentenced to fines	.	.	-0.21** (0.01)	.	.	.	-0.00 (0.01)
Sentenced to imprisonment or community service	.	.	.	-0.36** (0.02)	.	.	-0.14** (0.01)
Prescribed medication for severe illness	.	.	.	.	-0.36** (0.02)	.	-0.21** (0.01)
Used psychotropic medication	.	.	.	.	.	-0.43** (0.01)	-0.33** (0.01)
R ²	0.04	0.04	0.01	0.01	0.01	0.03	0.08
N	84,008	84,008	84,008	84,008	84,008	84,008	84,008

Notes: This table reports OLS estimates and robust standard errors (in parentheses) from regressing log income at age 30 on the outcome variables examined in this paper. Columns 1–6 report results from bivariate regressions and column 7 from a multivariate regression. ** denotes the level of significance at 1 % or less.

Table 3. Educational attainment

	Graduated from upper secondary education			Enrolled in a polytechnic or university		
	Average	Difference to native children		Average	Difference to native children	
Native	0.85	.	.	0.45	.	.
Immigrant-native	0.78	-0.07** (0.01)	-0.03* (0.01)	0.45	-0.01 (0.01)	0.03* (0.01)
OECD	0.67	-0.18* (0.07)	-0.07 (0.05)	0.40	-0.06 (0.05)	0.09** (0.03)
Former Soviet Union	0.74	-0.11** (0.02)	0.03* (0.01)	0.36	-0.12** (0.02)	0.08** (0.02)
Other regions	0.48	-0.36** (0.04)	-0.18** (0.03)	0.19	-0.29** (0.02)	-0.05** (0.01)
<i>Control variables</i>						
Year of birth		yes	yes		yes	yes
Socioeconomic background		no	yes		no	yes
R ²		0.01	0.07		0.01	0.10
N		140 874			140 874	

Notes: This table reports average levels of educational attainment (columns 1 and 4) and OLS estimates level for indicator variables of parent's immigrant status (columns 2–3 and 5–6) using native parents as the omitted category. Standard errors (in parentheses) are clustered at place of residence. Columns 2 and 5 report estimates from specifications controlling only for the year of birth, and columns 3 and 6 for specifications that also control for the socioeconomic background measured at age 15. * denotes the level of significance at 5 % or less, ** denotes the level of significance at 1 % or less.

Table 4. Criminal sentences

	Sentenced to fines		Sentenced to imprisonment or community service			
	Average	Difference to native children		Average	Difference to native children	
Natives	0.10	.	.	0.04	.	.
Immigrant-native	0.13	0.04** (0.01)	0.02* (0.01)	0.05	0.01 (0.01)	-0.00 (0.01)
OECD	0.18	0.08* (0.03)	0.03 (0.03)	0.04	-0.00 (0.01)	-0.04** (0.01)
Former Soviet Union	0.17	0.07** (0.01)	0.01 (0.01)	0.07	0.03** (0.01)	-0.01 (0.01)
Other regions	0.23	0.13** (0.01)	0.05** (0.01)	0.13	0.09** (0.02)	0.03* (0.02)
<i>Control variables</i>						
Year of birth		yes	yes		yes	yes
Socioeconomic background		no	yes		no	yes
R ²		0.00	0.02		0.00	0.02
N		140 874			140 874	

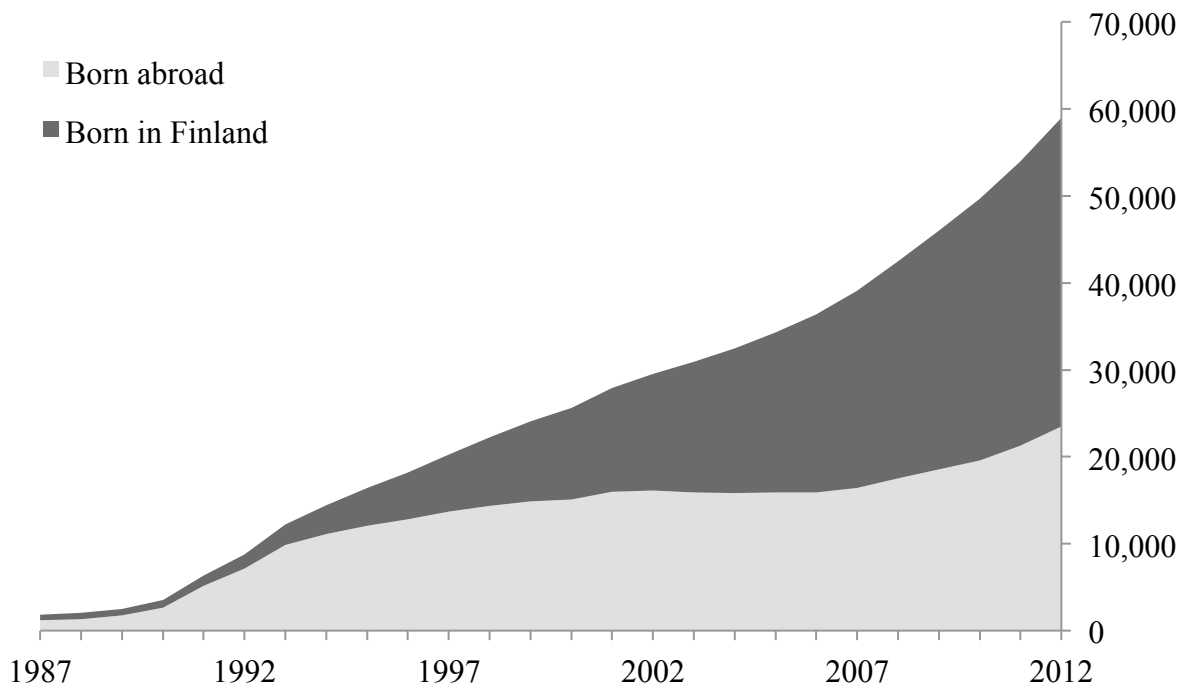
Notes: This table reports average criminal sentences (columns 1 and 4) and OLS estimates level for indicator variables of parent's immigrant status (columns 2–3 and 5–6) using native parents as the omitted category. Standard errors (in parentheses) are clustered at place of residence. Columns 2 and 5 report estimates from specifications controlling only for the year of birth, and columns 3 and 6 for specifications that also control for the socioeconomic background measured at age 15. * denotes the level of significance at 5 % or less, ** denotes the level of significance at 1 % or less.

Table 5. Use of medical services

	Prescribed medication for severe illness			Used psychotropic medication		
	Average	Difference to native children		Average	Difference to native children	
Native	0.04	.	.	0.11	.	.
Immigrant-native	0.03	-0.01 (0.01)	-0.01 (0.01)	0.13	0.01 (0.01)	-0.01 (0.01)
OECD	0.02	-0.02 (0.02)	-0.02 (0.02)	0.07	-0.06** (0.02)	-0.09** (0.01)
Former Soviet Union	0.03	-0.01* (0.005)	-0.02** (0.01)	0.09	-0.04** (0.01)	-0.08** (0.01)
Other regions	0.02	-0.02** (0.005)	-0.03** (0.00)	0.08	-0.05** (0.01)	-0.11** (0.01)
<i>Control variables</i>						
Year of birth		yes	yes		yes	yes
Socioeconomic background		no	yes		no	yes
R ²		0.00	0.00		0.01	0.02
N		140 874			140 874	

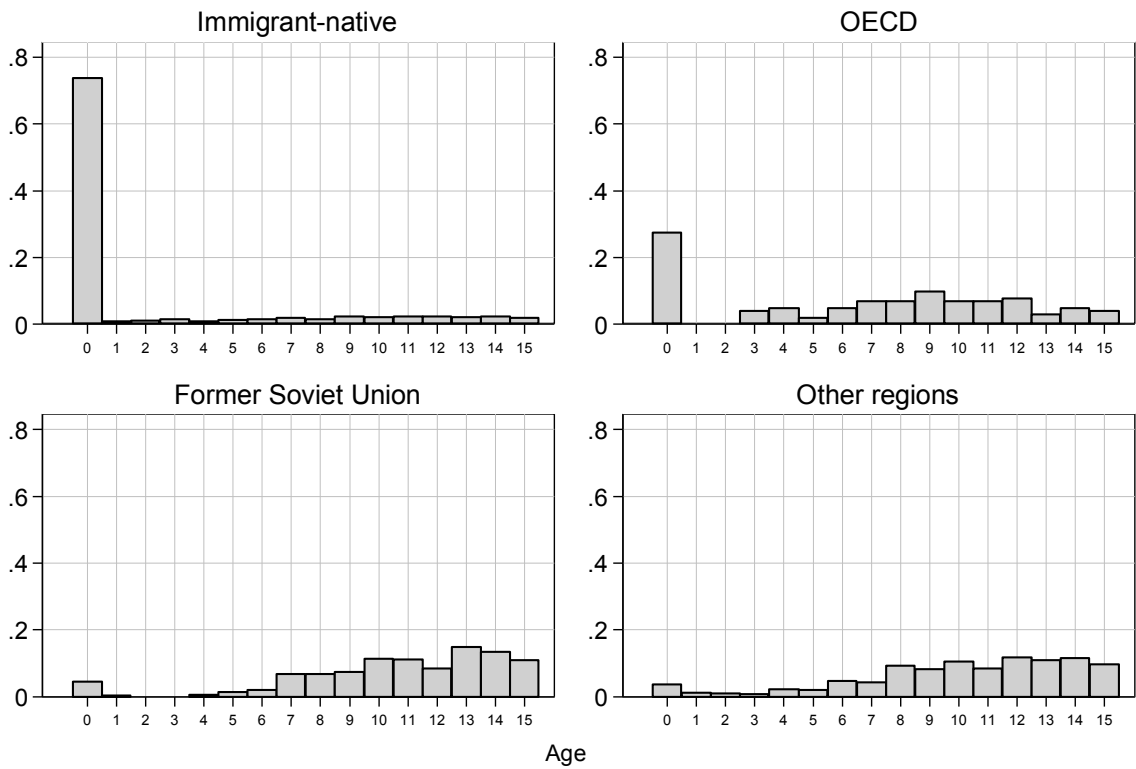
Notes: This table reports average measures of health (columns 1 and 4) and OLS estimates level for indicator variables of parent's immigrant status (columns 2–3 and 5–6) using native parents as the omitted category. Standard errors (in parentheses) are clustered at place of residence. Columns 2 and 5 report estimates from specifications controlling only for the year of birth, and columns 3 and 6 for specifications that also control for the socioeconomic background measured at age 15. * denotes the level of significance at 5 % or less, ** denotes the level of significance at 1 % or less.

Fig. 1 Children with foreign-born parents living in Finland in 1987-2012



Notes: This figure reports the number of under 18-year-old individuals living in Finland with both parents foreign-born.

Fig. 2 Age at arrival



Notes: This figure presents the age at arrival for children of immigrants included in our analysis. Zero refers to the child being born in Finland.

Appendix

A1. Definition of immigrant categories

- *Natives* are individuals who are either i) born in Finland, regardless of their registered native language, or ii) born abroad and their registered native language is Finnish or Swedish, with the exceptions mentioned below.
- *Immigrants from OECD countries* are born in an OECD country and their registered native language is not Finnish or Swedish in the first year we observe them. The exception is Swedish-born, Swedish-speaking individuals, who are also defined as immigrants from OECD countries.
- *Immigrants from the former Soviet Union* have registered their country of birth as the Soviet Union, Russia or Estonia.¹¹
- *Immigrants from other regions* are born in a non-OECD, non-former Soviet Union country and their registered native language is some other language than Finnish or Swedish.

Outcome variables

Education

The Finnish education system consists of i) basic education in comprehensive schools for the whole age group (nine years); ii) upper secondary education, comprising general and vocational education and training (usually three years); and iii) higher education at a university or a polytechnic (also known as universities of applied sciences).

Our first measure of educational attainment is an indicator for the person having graduated from a general or vocational upper secondary school by the age of 23. A person

¹¹ We consider parents born in the former Soviet Union as immigrants even if their registered language is Finnish (or very rarely Swedish). Among these immigrant groups there are many ethnic Finnish return migrants, who we consider to be in a different position than the native population of Finland.

Appendix

following the standard curriculum would graduate at age 19. However, graduation is often postponed by switching between different tracks of studies, attending tenth grade after comprehensive school, completing the matriculation examination over multiple semesters, gap years and exchange studies. In our data, almost all individuals who ever complete upper secondary education had graduated by age 23.

Our second measure for educational attainment is an indicator for the person having enrolled in college by the age of 23. We use enrollment rather than graduation, because most of those in higher education have not yet completed their studies by the age of 23.

Criminal sentences

Our data on criminal activity comes from the Recidivism Register, which contains judgments delivered by district courts and courts of appeal since 1977. Our first measure is an indicator for the person having received a fine from these courts. This does not include on-the-spot fines issued by the police or summary penal judgments (usually fines) and thus the pettiest forms of crime such as littering and minor misdemeanors are excluded from the analysis. According to Marttunen (2005), roughly three quarters of the offences committed by youth are not taken to court but handled through summary penal proceedings. The most common crimes in this category are relatively minor traffic offences. Our second measure for criminal activity is an indicator for the person being sentenced to unconditional or conditional imprisonment or community service.

Medical services

Finland provides highly subsidized public health care for all residents. The national health insurance scheme covers everyone living in Finland on a permanent basis and provides reimbursement for e.g. the cost of necessary medicines prescribed by a doctor for the

Appendix

treatment of an illness. The basic rates of reimbursement vary between 65–100 % of the cost of the medicines.

Our first measure of the use of medical services is an indicator for the Social Insurance Institution of Finland having granted the person full reimbursement for her medical costs for treating a severe and long-term illness by the age of 23. This indicates that the person has a severe illness, as defined in the Health Insurance Act (1224/2004), and that she filed the appropriate application. The most typical diseases covered are diabetes, epilepsy, severe psychosis or other severe mental disorders, different cancers and malign tumors, and behavioral disorders related to mental/intellectual disabilities. However, being entitled to reimbursement does not necessarily mean that the individual has actually used the prescribed medication. Moreover, the interpretation of the outcome may be especially ambiguous among immigrants, because diseases for which the reimbursement is available may be very atypical among some ethnic groups.

Our second health measure is an indicator for having been reimbursed for purchasing psychotropic medication by the age of 23. Psychotropic medication include antipsychotics, neurosis medication, sleep medication, antidepressants, and central nervous system stimulants. In contrast to medication for a severe illness, it is highly likely that the individual actually has used the reimbursed psychotropic medication, since this reimbursement is received only after purchasing the medication.

Control variables

Parents' months of employment

We control for parents' months of employment using 14 indicator variables. The first category consists of parents with missing months of employment (no observations in the data for either of the parents) and the next of parents with zero months of employment (neither has

Appendix

been employed at all during the year). The remaining 12 categories consist of the averages of their combined months of employment (0-1 months, 1-2 months and so on).

Income decile of the sum of parents' labor income

We control for parents' income deciles using ten indicator variables for their taxable income and an additional category for the parents having missing taxable income. Parents with zero taxable income belong to the lowest decile¹². The income distributions are year-specific, and we have formed the deciles based on observations in the sample, not in the whole population. We have not applied any equivalence scale to the taxable income.

Age of mother and father

The ages of the mother and the father are controlled for using seven indicator variables. One category consists of parents with missing ages (meaning the person's parents were not observed during the year she was 15 years old). The other categories are: younger than 35 years, 35 to 39 years, 40 to 44 years and so on, the last category being older than 55 years.

Number of under 18-year-old children living in the same household

We control for the number of siblings using six indicator variables. One category consists of missing number of children (the number is not known), and another of households with one under-aged child. Households with 2 to 4 children form 3 separate categories, and households with 5 or more children make up the last category.

Place of residence

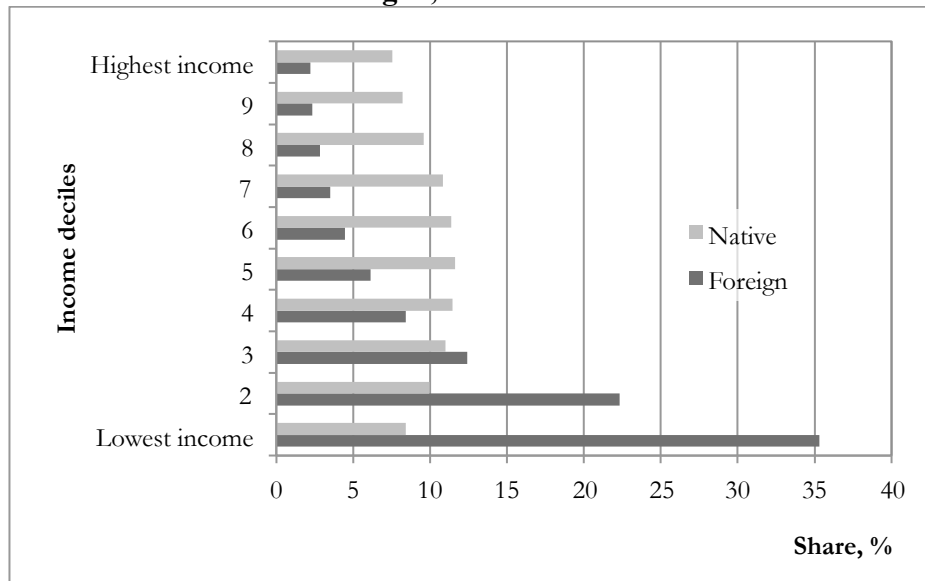
¹² Household income in terms of taxable income may be zero when the income consists of non-taxable social security benefits such as social assistance, child benefit and various housing benefits.

Appendix

We do not directly observe the location of residence. However, the data contain information on the individual's region of residence and the degree of urbanization of the residence municipality. We combine this information into 124 indicator variables capturing the type of location the person was living in at age 15.

Appendix

Fig. 2 Households with children under 18 years old by income and by native tongue, 2012.



Source: Total Statistics on Income Distribution and Statistics Finland / Hannele Sauli.

Appendix

Table A1. Pairwise correlation coefficients

	Graduated from upper secondary school	Studied in a polytechnic or university	Sentenced to fines	Sentenced to imprisonment or community service	Prescribed medication for severe illness	Used psychotropic medication
A: Children of natives						
Graduated from upper secondary school	1.00					
Studied in a polytechnic or university	0.36 (0.00)	1.00				
Sentenced to fines	-0.27 (0.00)	-0.21 (0.00)	1.00			
Sentenced to imprisonment or community service	-0.25 (0.00)	-0.16 (0.00)	0.39 (0.00)	1.00		
Prescribed medication for severe illness	-0.08 (0.00)	-0.05 (0.00)	0.01 (0.00)	0.01 (0.01)	1.00	
Used psychotropic medication	-0.16 (0.00)	-0.09 (0.00)	0.09 (0.00)	0.10 (0.00)	0.19 (0.00)	1.00
B: Children of immigrants						
Graduated from upper secondary school	1.00					
Studied in a polytechnic or university	0.45 (0.00)	1.00				
Sentenced to fines	-0.23 (0.00)	-0.21 (0.00)	1.00			
Sentenced to imprisonment or community service	-0.22 (0.00)	-0.20 (0.00)	0.39 (0.00)	1.00		
Prescribed medication for severe illness	-0.02 (0.46)	-0.02 (0.48)	0.06 (0.04)	0.04 (0.16)	1.00	
Used psychotropic medication	-0.09 (0.00)	-0.07 (0.02)	0.01 (0.61)	0.06 (0.03)	0.25 (0.00)	1.00