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*Families, neighborhoods, and the future: The  
transition to adulthood of children of native and  
immigrant origin in Sweden*

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## ABSTRACT

In this paper, we examine mechanisms that generate gaps in educational attainment and labor market outcomes between children of immigrants and children of native Swedes. Theoretical explanations of how social inequality between generations is (re)produced focus on a relative lack of resources within the family and/or in the broader social environment, particularly in neighborhoods and schools. In the empirical analyses we follow over time all individuals who completed compulsory school during the period 1990 -1995 and analyze what types of background factors have influenced their educational and labor market careers, which are measured for the year 2007. On the basis of our empirical results we conclude that the gaps between children of immigrants and children of native Swedes are mainly generated by differences in various forms of resources in the family of origin. The role of neighborhood segregation is less substantial. Moreover, our results indicate that the gaps in employment are larger than the corresponding gaps in educational attainment. When gainfully employed, children of immigrants born in Sweden follow roughly the same path as children from native families in contrast to children born abroad.

Keywords: Inequality, education, labor market, children of immigrants

JEL codes: I21, J15, J31

## Families, neighborhoods, and the future: The transition to adulthood of children of native and immigrant origin in Sweden

In recent decades, Sweden much like many other western countries opened its borders to substantial waves of immigrants. This extensive immigration has resulted in a rapid growth of the proportion of children of immigrants in Swedish schools. In this paper, we analyze differences in the educational and labor market careers of young people of immigrant versus native-Swedish origins. In the international literature on the life-chances of children of immigrants, two aspects of their social environment are usually emphasized. First, researchers link the children's future careers within the educational system and in the labor market to the parental generation's socio-economic status. Second, the role of spatial segregation during childhood is often stressed.

According to a pessimistic scenario, limited resources in the parental generation in combination with ethnically segregated schools and neighborhoods lead to limited possibilities for successful integration in the host country (Borjas 1995; Portes and Rumbaud 2001; Zhou 1997). However, there is a more optimistic alternative in which the process of integration is seen as a long-term process during which the ethnic disadvantage gradually disappears (e.g., Alba and Nee 2003).

Swedish research on the children of immigrants and their life-chances is limited. Earlier studies have shown that young people of immigrant origin have poorer elementary and secondary school grades, are less likely to complete high school, and on average spend fewer years in school. Children of immigrants are a heterogeneous group, and there are clear differences in school performance, depending on whether they were born in Sweden and on their age at immigration to Sweden (Skolverket 2004, Szulkin and Jonsson 2008). Young people of immigrant origin who were raised in Sweden also have lower employment levels and incomes than their native-Swedish peers (Nekby et al. 2007).

In order to study the question of how this gap in educational and labor market careers arises, we will analyze a data-set that includes all individuals who completed compulsory school between 1990 and 1995. We follow these individuals over time and analyze which types of background factors have an effect on their educational and labor market careers, which are measured for the year 2007, when they are 28 to 33 years old. We study whether the social environment during childhood has long-term consequences for the individual's outcomes in adulthood. Two types of factors are analyzed: First, we study the family of origin's socio-economic status and the role that it plays in terms of differences in future careers between young people with and without immigrant background. Second, we examine whether residential segregation has an impact on these differences. The growing residential segregation during the 1990s has resulted in a situation in which large numbers of children of immigrants grew up in social environments with relatively limited contact with native-Swedish children (Bitterman and Franzén 2006).

### *Theoretical model*

Why are there systematic differences in educational and labor market careers between young people of immigrant and Swedish origin? What factors in the childhood environment, besides the family, influence the individual's future educational choices and labor market outcomes? On the basis of previous research, Figure 1 presents a stylized model of the consequences of childhood conditions on adult life outcomes.

"Figure 1 here"

### **Families**

A basic assumption in the model (that is represented by arrows 1a and 1b) is that there is social inheritance in the educational system. The parents' educational, cultural, and economic resources, but also their understanding of how the educational system works, influence educational results, educational careers and, in the long-term, labor market careers (see, for example, Schneider and Coleman 1993, Erikson and Jonsson 1996; Breen and Jonsson 2005 for review of the literature). Families play a central role in

children's socialization and therefore contribute to their future successes or failures in adulthood.

Parents use different strategies to support children and raise their chances for success in the educational system. Parents can help with their children's school work and can try to expand the children's horizons through their choice of intellectually stimulating leisure-time activities. The everyday life of the children is influenced by the family's social position. As Lareau (2003) pointed out, the "cultural repertoire" used at home by well-educated parents resembles the "cultural repertoire" that is central in the educational system, which reinforces the advantageous position of the children from higher social classes. In other words, parents invest time and other resources, and use everyday practices in order to transfer cultural capital to the next generation.

Previous research has shown that the social position of the family of origin influences the children's success in the educational system, in part through the children's performance in school (Arrow1a), and in part through the children's educational choices and educational careers, controlled for their previous performance (Arrow1b). In educational research, the first type of effect is called the *primary* effect and the other the *secondary* effect (Boudon 1974, Erikson and Jonsson 1996, Erikson et al., 2005). About half of the association between social origin and educational career depends on primary effects, and the other half on secondary effects, that is, on the fact that at every grade level children from more advantaged socioeconomic classes more often choose to continue on to higher levels of education than do children from lower classes.

Given that immigrant families have, on average, more limited resources than native families, one can expect that children of immigrants will be disadvantaged at all levels in the educational system. Moreover, it is reasonable to assume that immigrant parents have less knowledge about the educational system and about which educational tracks hold the greatest potential for future successes. The position of immigrant families' in a stratified social system can thus be assumed to impose a relative limit on the educational career possibilities of their offspring.

In a labor market in which employers utilize meritocratic principles when hiring, promoting, and rewarding workers, formal education ought to be of crucial importance. Formal education is an important indicator of individual's work capacity and suitability and, thus, education ought to play a central role in the allocation process through which individuals are matched to jobs (Arrow5). In addition to formal educational merits, employers may also be interested in other indicators of the (prospective) employee's ability to contribute to the work of the organization. The level of ambition and diligence may also be rewarded "merits" in the labor market. In the absence of reliable information about such characteristics, grades from different educational levels may play a role in the allocation processes (Arrow6). If meritocratic considerations are decisive in determining the allocation of individuals to jobs, background factors, such as social and ethnic origin, should play no role when differences between individuals' in educational attainment are taken into account.

Nevertheless, the arguments above have been questioned on both theoretical and empirical grounds. Breen and Goldthorpe (2001), for example, maintained that in a market economy, it is the employer who defines which "merits" count in the labor market (see also Breen 2004). Obviously, education is an important criterion in hiring. However, other characteristics such as loyalty, conscientiousness, adaptability, and social competence are included in the repertoire of personal characteristics that are considered important. An upbringing in a home with well-educated parents may constitute an advantage in hiring situations, where employers assess whether an individual makes the "right" impression in the "right" situation. The family of origin can thus be an asset (or a liability) that influences an individual's career over and above formal education.<sup>1</sup> Empirical analyses have shown that individuals with the same level of education and the same type of education may earn different incomes, depending on the class position of the family of origin (Erikson and Jonsson 1998).

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<sup>1</sup> The rising demand for social competence and other personal characteristics have been documented in research on the changing conditions of work (see, for example, Gallie and Rose 1996).

It is apparent that children of immigrants will be at a relative disadvantage when applying for attractive positions in a labor market in which employers define “merit” as a broad repertoire of personal characteristics rather than simply as formal education. Furthermore, there is experimental evidence that some employers include a Swedish sounding name in their definition of “merit” (Bursell 2007, Carlsson and Rooth 2007). Obviously, discrimination constitutes an important career obstacle for persons of foreign origin, regardless of their education. The above arguments indicate that a family’s social and ethnic origin may have a direct effect on the future labor market careers of its children (Arrow1c in the model above).

### **Neighborhoods and schools**

The high level of social and ethnic segregation in numerous European cities (Bitterman and Franzén 2006, Mustard 2005) means that many young people grow up in low-income neighborhoods with relatively low levels of education, where levels of unemployment and the number of social welfare recipients are high. For children of immigrants, ethnic residential segregation implies growing up in a social environment where contact with the majority population is limited. The key question in this context is whether the children from these areas would have had better prospects if they had grown up elsewhere.

The social structure of a local community can be assumed to exercise a long-term influence on individuals who grow up there. The everyday life of individuals in a local community is characterized by specific patterns of interactions among family members, neighbors (both adults and children) in youth centers, athletic clubs, and last but not least, within the schools with other pupils and teachers. Members of the local community can function as role models and convey interests, norms, aspirations, and exercise informal social control (e.g., Coleman and Hoffer 1987, Crowder and South 2003, and Szulkin and Jonsson 2008). In a local community with high levels of social exclusion, where social problems are extensive and relatively few individuals support themselves, the immediate environment may have a negative effect on the ambition of young people to achieve in school, and on their future educational attainment. Accordingly, there may be considerable disadvantages associated with residential segregation. Spatial segregation of children and young people of immigrant origin can result in a lack of natural contacts with

affluent individuals and create homogeneous environments that may be characterized by extensive social problems and a lack of positive role models. In such areas, social disadvantage can be transferred between generations, thereby cementing it. In other words, social segregation of the arenas where young people grow up can hinder or impede the development of knowledge and skills necessary for educational success (Arrow3a and 3b in the model)<sup>2</sup>.

Children of immigrants in segregated neighborhoods are provided with many examples of adults whose educational merits from their countries of origin do not lead to adequate employment in the new country. One can hypothesize that children under such circumstances underestimate the value of education and formal merits and therefore put less effort into school work (cf. Morgan 2005). A more pointed version of this hypothesis states that minority groups who have long lived in marginalized circumstances may be more disposed to develop "oppositional cultures" that question the central social values of the majority society (Fordham and Ogbu 1986). Observing various forms of obstacles and social mobility barriers (Zhou 1997) in the adult generation may have a negative impact on educational aspirations.

Hence, there are reasons to expect that ethnic and social residential segregation has indirect consequences on young peoples' future employment careers since segregation may influence educational attainment. Is there any reason to expect a direct effect of segregation on labor market outcomes when educational attainment has been accounted for (Arrow3c)? Arguments for the direct effect of segregation on the individual's labor market outcomes may be found in the social networks literature. Several studies show that large numbers of employees find their jobs through informal channels, that is, through family or friends (e.g., Granovetter 1973, 1995, Ioannides and Loury 2004). Arrow and Borzekowski (2004) have shown that the number of the network ties explains a substantial part of the income differences between employees with similar qualifications.

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<sup>2</sup> Arrow in 2a in Figure 1 represents the circumstance that the housing market is a market and the family's economic resources influences where they live. The economic mechanisms underlying housing segregation are not addressed in this paper. The reversed arrow (Arrow2b) from housing to the family's social situation represents the process through which the circumstances in the residential environment might have an impact on the individual outcome of adults who reside in this environment (e.g., Hedström and Åberg 2005).

Since immigrants are newcomers to a country, it is reasonable to assume that immigrant families' social contacts do not usually include people with power and influence. The relatively limited access to advantageous social contacts for immigrant families can therefore constitute a disadvantage for the future employment of the children (Olli 2005, Behtoui 2006). The individuals studied in the empirical part of the paper are relatively young. This means that the family's social ties and the peer contacts they developed themselves in the local community can be relatively significant compared with the importance of these factors later in life. Segregated housing that yields limited ties with the majority population should be an obstacle for developing the type of networks with potentially high payoffs in the labor market. Thus, Arrow's model may be of significance for our analysis.

The literature that has been discussed thus far gives a pessimistic view of the long-term consequences of ethnic and socio-economic segregation on young people of foreign origin. There are, however, arguments that call into question at least parts of this dark picture. The socio-economic and ethnic dimensions of residential segregation do not necessarily coincide. Immigrants in segregated areas often constitute a rather heterogeneous group. Well-educated families also live alongside under-privileged immigrant families with low levels of education in immigrant-dense areas (Borjas 1994). The theory of "segmented assimilation" implies that ethnic segregation can protect against the negative effects of socio-economic segregation amid the majority population (Portes and Zhou 1993, Zhou 1997). According to this theory, the life-chances of ethnic minorities depend on more or less detrimental structural circumstances in the local context to which they are exposed, and on whether they opt for complete or selective assimilation. According to Xie and Greenman's (2005) operationalization, this theory deals with the interaction between the local context and the assimilation strategies adopted by minorities. Complete assimilation to an underprivileged social environment results in long-term negative consequences. In such a context, selective assimilation that

maintains the positive aspects of the culture of origin can be advantageous.<sup>3</sup> In other words, growing up in an immigrant-dense neighborhood with a heterogeneous population that encompasses a relatively high proportion of immigrant families with an “advantageous” social background can yield positive results.

Some authors also believe that ethnic segregation and ethnic enclaves can create new forms of solidarity, thereby opening possibilities for success in the new country (see the debate between Portes and Jensen and Sanders and Nee in the *American Sociological Review*, vol. 52, 54, and 57; and Borjas 1992, 1995). According to this perspective, contacts between members of an ethnic minority group in segregated neighborhoods can lead to dissemination of valuable information about employment possibilities and make it easier for immigrants to avoid labor market discrimination (Borjas 2000). The emergence of ethnic “economies” in the form of companies owned by immigrants can provide positive opportunities for gainful employment for persons of foreign origin.

Whether ethnic residential segregation has negative or positive consequences for individuals who grew up in segregated surroundings is an empirical question. It is, however, worth noting that the ideas about the potential positive consequences of segregation are taken from American literature and hence are based on a reality that differs from the Swedish situation. The mechanism that may lead to ethnic solidarity in segregated neighborhoods is that ethnic homogeneous groups share the local community’s immediate environment. The web of contacts that emerges in this environment is assumed to result in positive outcomes. Ethnic residential segregation in Sweden has created multi-ethnic environments rather than ethnic homogeneity (Integrationsverket 2006). Subsequently, there is perhaps less reason to expect that the positive mechanisms described above would operate on any larger scale in Sweden.

### *Previous research*

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Whether the choice of assimilation strategy in a relatively affluent environment influences future outcomes is an open question (Xie and Greenmans 2005).

Identifying which aspects of the social environment effect young people's future careers in the educational system and in the labor market is a methodologically difficult task. One fruitful approach for estimating the relative effects of family background and the local community (the school, or the neighborhood) on future individual careers, is to compute sibling correlations in individual outcomes such as school performance, educational attainment, and adulthood income. The idea is based on the notion that sibling correlations cover all of the factors that siblings have in common, such as family background and childhood circumstances in a broader sense. In the same way, correlations between neighbors or schoolmates may give an idea of how much these arenas for socialization can explain the future careers of individuals who grew up in the same neighborhoods and attended the same schools. Recent international and Swedish studies have shown that sibling correlations are considerably stronger than correlations between persons who grew up in the same neighborhoods or attended the same school (Björklund et al., 2003, Björklund and Jäntti 2009, Lindahl 2008, Solon et al., 2000). These studies do not directly address the issue of whether families of origin, neighborhoods, or schools are the main sources of the gaps in different outcomes between children of immigrants and children with native background. If the sibling correlations are substantially stronger than the correlations between individuals who share other aspects of the social environment during the childhood, this indicates, however, that the family of origin can be expected to play a greater role than the school or the neighborhood when the gap in educational attainment and labor market careers is analyzed.<sup>4</sup>

Although previous research has shown that school and neighborhood effects are not especially strong compared to the effects of the family of origin, there are many studies indicating that the social and ethnic composition of the childhood environment's influence young people's school performance and level of education<sup>5</sup>, and have an impact

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<sup>4</sup> Authors who have used other methodological approaches also often come to the conclusion that the neighborhood effects are relatively weak compared to the effects of the families of origin (see Vigdor 2008 for an overview).

<sup>5</sup> International and Swedish studies indicate that the social school segregation constitutes an obstacle to success in school in those pupils who live in underprivileged areas (Dryler 2001; Erikson 1994; Hanushek, Kain, and Rivkin 2002; Robertson and Symons 2003; Szulkin 2005; Willms 1986). Similar results are

on the gap in educational achievement between children of immigrants and those of native background. Szulkin and Jonsson (2008) show, for example, that school segregation by ethnicity has a clearly negative effect on the school performance of young people who have recently immigrated to Sweden.

Most studies referred to above deal with the effects of segregation on school performance. Swedish studies of longer-term effects, that is, effects on the highest level of education attained as adults, are rare. Grönqvist (2006) and Bygren and Szulkin (2010) analyze how being raised in ethnic enclaves influences the future educational career. Their studies do not, however, address the question of whether these possible long-term effects influence the differences between youths of native Swedish versus immigrant background. We have not come across any previous studies dealing with the possible effects of segregation on differences in employment outcomes as adults.

Analyzing how the family's educational and socio-economic resources influence the differences in the children's school performance is a rather common approach in the sociology of education. Previous research on immigrants' children ("second generation") has shown that a substantial part (and sometimes all) of the observed difference in school performance between them and their peer-group of non-immigrant background disappears after statistical controls for the education and other socio-economic characteristics of the family of origin (Warren 1996; Heath and Birnbaum 2007; Heath et al. 2008, for a review of literature). Jonsson and Rudolphi (2008) found a similar pattern in an analysis of all students who completed compulsory school between 1998 and 2003 in Sweden. In effect, educational resources are transferred between generations. This transmission explains much of the difference between children born in Sweden of Swedish parents and those born of immigrant parents.<sup>6</sup> The results are about the same for

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found in the studies that have analyzed the correlation between residential/housing segregation and school performance (for literature reviews, see Dietz 2002; Sampson, Morenoff and Gannon-Rowley 2002; Durlauf 2004). In all studies that make this comparison, however, the between school/neighborhood variance is much less than the variance within these units. This indicates once again that the factors linked to the families are of greater importance for the various types of outcomes than the factors linked to the local community.

<sup>6</sup> Jonsson and Rudolphi caution against the possibility of using too many controls in the analyses. Let us assume that we live in a society with relatively well-educated immigrants in the parental generation and

young people who immigrated to Sweden at a very young age. The family's education and socio-economic status play important role for future educational outcomes even for students who immigrated to Sweden after reaching school age. For these older youths, though, the differences in grades, compared to native Swedes remain even after the family's education and labor market situation are held constant (Szulkin and Jonsson 2008). Young people who immigrated to Sweden between the ages of 13 and 16 in general have lower grades from the ninth grade on, which is perhaps not so surprising, but is nonetheless worrisome. However, these differences seem to decrease over the life-course (Böhlmark 2007, 2008). Recently arrived young people seem to catch up educationally over time. The cultural and economic resources of the family of origin are thus central to various types of future empirical outcomes, regardless of whether the children belong to minority groups or to the society's majority (Heath and Birnbaum 2007).

The careers of young people of foreign origin in the Swedish labor market have been much less analyzed than those of adult immigrants'. Two studies are of particular relevance for our analyses (Arai et al., 2000 and Nekby et al., 2007). Arai et al. followed a representative sample of young people born around 1972 through their educational choices and entry into the labor market in 1995. One of the study's central findings is that young people of foreign background have higher unemployment rates than young people of Swedish origin. The differences can in part be explained by the parents' education and labor market situation. Even when individuals with similar levels of education and similar school grades are compared, a pronounced gap remains between young people with and without an immigrant background. Nekby et al. followed the same cohort of young people up until the age of 30. The main findings are about the same as in the earlier study. The main difference between the studies is that for young people who

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with a relatively high level of labor market discrimination. Furthermore, let us assume that the labor market position of parents influences the future educational attainment of their children. To the extent that immigrant parents have graduated in their countries of origin, the education is an exogenous variable in relation to the outcomes in the children generation. The relatively poor labor market position, high risk for unemployment, low income, etc., may be a result of discrimination, and therefore endogenous variables for minority status. To statistically control for these endogenous characteristics to the minority status may conceal the long-term effects of discrimination under the label "differences in socio-economic resources."

graduated from Swedish universities, an immigrant background does not seem to be inhibit their careers.

In summary, there are good reasons to believe that the educational and labor market careers of young people with and without an immigrant background differ. In line with theoretical arguments and empirical research, we expect that these differences are mainly generated by the processes of intergenerational transmission of advantage and disadvantage within families as well as by the impact of neighborhoods and schools during adolescence. However, consistent with recent research, we expect that the family of origin plays the most important role in determining the social destination of children.

### *Data*

The dataset used in the empirical analyses includes all students who finished ninth grade in the Swedish compulsory school between 1990 and 1995 (about 588,000 individuals). Information about the individual students was obtained from the ninth-grade register at Statistics Sweden and matched with information about their parents from a series of registers at Statistics Sweden.<sup>7</sup>

### **Dependent variables**

In our analyses, we use three outcome variables measured in 2007: the log number of years of education, a dummy indicating employment (defined as annual earnings above 60,000 SEK),<sup>8</sup> and log annual earnings above the same threshold of 60,000. The latter two outcome variables aim to identify whether the differences in labor market outcomes are driven by differences in employment or in level of earnings when gainfully employed. Years of education measures the highest attained level of education.<sup>9</sup> We include all

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<sup>7</sup> The data base that is used is called STAR ("Sverige över Tid: Aktiviteter och Relationer", Sweden over Time: Activities and Relations) and is a collection of administrative registers that is compiled by Statistics Sweden (SCB) for projects emanating from the Institute for Social Research (SOFI) and the Dept of Sociology at Stockholm University. In addition to the ninth-grade register, STAR consists of the longitudinal integration data base for health insurance and labor market studies (LISA), multi-generational register and the geography data base.

<sup>8</sup> In 2007 1 USD equaled 6.76 SEK.

<sup>9</sup> The measure is based on Statistics Sweden's educational nomenclature SUN2000. Individuals may have longer education than indicated by the measure, if for example someone studies at the university for five

pupils who completed ninth grade between 1990 and 1995. They were born between 1974 and 1979 and were 28 to 33 years old in 2007. The reason for this age selection is that labor market attachment may be unstable during a person's early twenties, and earnings during the early twenties do not reflect a more permanent employment picture (Björklund 1993). In the analyses of labor market outcomes, we exclude all those individuals who are studying (the exclusion criterion being registration at a university or study-related incomes above zero). Individuals enrolled in a course of study generally earn less because it is difficult to combine study with work. However, in the long-run studying intends to influence earnings positively. As a consequence of this exclusion, the model for employment and earnings is estimated based on somewhat fewer cases than the model for education.

### **Independent variables**

For each student, the dataset contains information about sex, country (or region) of birth, and age at immigration. Immigrant status has been coded based on information about one's own country of birth, whether parents were born abroad, and the year of the individual's arrival to Sweden. If a person was born abroad of foreign-born parents, s/he is considered a first-generation immigrant. A person born in Sweden of foreign-born parents is categorized as a second-generation immigrant.<sup>10</sup> There is also information about the student's final ninth-grade grades.

For parents, the data-set includes information about their highest level of education, whether they were employed or not, and the family's total disposable income. The parents' levels of education are coded according to the dominance principle, whereby parent with the highest level of education represents the family's collective educational resources. The variable is divided into compulsory school, short (vocational) secondary school, long (theoretical) secondary school, short post-secondary education, academic education, and, finally, postgraduate studies. We have also computed a dummy variable

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years but only completes a B.A. Overall such errors are of minor importance (Antelius and Björklund 2000).

<sup>10</sup> If there is information about one parent only, we use her/his country of birth to identify the status of the children. As follows from our definition, children are considered to be of Swedish origin if one of their parents was born in Sweden.

indicating whether the highest level of education had been completed in Sweden or abroad.<sup>11</sup> The variables that measure family demography are two indicators of single father/mother, and variables that measure the number of siblings in three age spans (0 to 6, 7 to 12 and above 13 years). Parental employment is coded separately for both parents and is defined as annual earnings above 10,000 SEK. This allows us to capture the effect of being brought up in a family with one or two working parents. All parental characteristics are measured during the year their child complete compulsory school (usually at age 16).

In addition, we have information on the neighborhood where the child was brought up. The reason why we have based our analysis on neighborhoods rather than schools is that our measures of neighborhood seem to be more important for educational achievement and earnings later in life (see also Figure 2 below). The neighborhoods have been defined in accordance with Statistics Sweden's detailed SAMS classification.<sup>12</sup> One important advantage of this classification is that it splits Swedish residential areas into small socially homogenous neighborhoods. The SAMS classification is comparable to a United States census tract (Galster et al. 2008).

### *Analytical strategy*

Analyzing the impact of social environment on individual outcomes entails several methodological problems (Manski 2000). That individuals in different social environments distinguish themselves in a number of central areas such as school performance, educational careers, employment situation, criminality, and the like, results from so-called selection effects (or population sorting) or contextual effects. Selection effects emerge because people in the same social environment tend to have similar individual characteristics. For example, children from different social conditions live in different neighborhoods and attend different schools with very

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<sup>11</sup> The dummy variable was constructed using information on the individual's age, total number of years of education, and age on arrival in Sweden. We assume that individuals in our population began school at age seven and completed their studies without interruptions.

<sup>12</sup> SAMS is the acronym for Small Area Market Statistics. There are approximately 9200 SAMS areas in Sweden. The average population residing in a SAMS is about 1000 persons. The SAMS is developed by each municipality for administrative purposes (e.g., planning of social services), but serves as a good proxy of neighborhood because their size is relatively small. It should, however, be noted that there is heterogeneity in the definition of SAMS across municipalities.

different characteristics. The differences in future educational and labor market careers between young persons raised in different neighborhoods can therefore depend on differences in social background of the inhabitants between the neighborhoods.

Selection into neighborhoods can be due to both observable and unobservable factors, which need to be accounted for in order to obtain unbiased estimates of the neighborhood effects. In the economics literature of intergenerational earnings correlations, the worry has generally been that neighborhood effects are upwardly biased because of unobserved selection into neighborhoods, and that a part of the neighborhood effect reflects parental characteristics (cf. Page and Solon 2003). In our attempt to separate the contribution of neighborhoods and families, we use a framework in which we rely on neighborhood fixed effects to measure both observable and unobservable features of the neighborhood while controlling for observable family characteristics. Including neighborhood fixed effects in our analyses amounts to controlling for all the area-specific effects that are common to everyone who lives in the area.

However, estimating unbiased neighborhood effects is further complicated by the fact that neighborhoods can influence the individual characteristics that one controls for (for example through differences in the employment prospects of parents due social network composition or so-called address discrimination). The risk is that one may over-control for family characteristics. If parents of immigrants earn less because they live in a specific neighborhood, controlling for parent's earnings will mute the neighborhood effect. Our strategy to handle this is as follows. We divide family characteristics into two sets, one that contains variables that are most likely exogenous to the situation of immigrant families in Sweden and one that is, at least partly, endogenous. The demographic structure of the family is definitely exogenous. The educational level of the parents is exogenous to a much greater extent than their employment situation and income, which we consider to be endogenous and possibly affected by ethnic minorities' subordinate status in the labor market, as well as by the characteristics of the neighborhood in which the family lives.

We define the neighborhood effect as the difference in the gap between children of immigrants and children of native Swedes in outcomes between models with and without neighborhood

fixed effects.<sup>13</sup> When including only the exogenous family characteristics as controls, we allow for the influence of neighborhood characteristics on parental labor market outcomes and get a maximum bound of the neighborhood effect. When including also the potentially endogenous family controls, we get a minimum bound of the effect.

However, with the type of data that we use here, it is not possible to entirely eliminate the selection problem. If the selection is based on unobservable factors such as parents' ambition level or strategy for avoidance of troublesome social conditions in the near environment, both of these estimates are upwardly biased. Nevertheless, we believe that controls for the extensive set of the individual level variables and controls for *fixed effects* for neighborhoods in our statistical models lend much strength to our analyses. Even if we cannot totally rule out the possibility that some of our results may be biased due to unobserved selection processes, we are confident that our analytical strategy allows us to draw conclusions about the important driving forces behind the differences in educational attainment and labor market rewards between children of immigrants and children of natives.<sup>14</sup>

## Results

To provide an overview of the crucial variables used in our analyses the descriptive statistics for these variables are presented in Table A1 in the Appendix. One can see that children of immigrants have, on average, lower levels on all outcome variables, but also that their parents have lower levels of education and employment.

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<sup>13</sup> In notation, the neighborhood effects is defined as  $\gamma_1 - \gamma_2$  obtained from the following equations

$$y = \alpha_1 + \gamma_1 * \text{immigrant dummy} + \mathbf{X}\boldsymbol{\beta}_1 + \varepsilon$$

$$y = \alpha_2 + \gamma_2 * \text{immigrant dummy} + \mathbf{X}\boldsymbol{\beta}_2 + u + \varepsilon$$

where  $y$  is the outcome,  $\mathbf{X}$  is a vector of family characteristics and  $u$  is the neighborhood fixed effect.

<sup>14</sup> In some empirical research, these problems have been dealt with by using Swedish immigrant placement policies by which refugee immigrants were distributed across the country in a way that might be considered as exogenous (Edin, Fredriksson and Åslund 2003). However, this strategy only estimates neighborhood effects for a limited proportion of the immigrant young people. Another identification strategy has been used by Plotnick and Hoffman (1999). They used family fixed effects to estimate the impact of neighborhood characteristics. Undoubtedly, this is an attractive strategy for removing bias from the estimation of neighborhood effects. However, it is not applicable when gaps in different outcomes between children of native and immigrant families are analyzed, as immigrants status would be captured by the family fixed effect.

As a descriptive background for our further analyses, Figure 2 shows how much of the variation in the outcomes (also including ninth grade GPA) that can be ascribed to the neighborhood, school, and family using a simple ANOVA technique. The intra-class coefficients describe the correlation between two randomly drawn individuals from the same neighborhood, school, and family. One can see that the residential area and school have rather limited significance in comparison to the family. Siblings have about 40 percent of the variation in number of education years in common, which reflects both neighborhood and family fixed effects (since siblings usually grow up in the same neighborhood). Individuals from the same residential area or school have only about five percent of the variation in common, which indicates that family factors are the main explanation of the sibling correlation. The correlation in educational level among people brought up in the same residential area is somewhat stronger than the correlation among individuals who attended the same school.<sup>15</sup>

For employment and earnings, the correlation between siblings is considerably lower, between fifteen and eighteen percent of the variation in these outcomes can be ascribed to the family of origin. Comparing sibling correlations with correlations between two persons who grew up in the same neighborhood indicates that the impact of residential area (around two percent) is much lower than the impact of family of origin. Even though these results are not conditional on covariates, they tentatively suggest that the role of the family of origin in producing future educational and labor market outcomes of children is much stronger than the role of neighborhoods and schools.

”Figure 2 in here”

## **Education**

The empirical analysis follows the arrows in the model presented in Figure 1. Table 1 presents

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<sup>15</sup> Note that the intra-class correlations with ninth grade GPA as the outcome indicates that schools are of slightly greater importance than neighborhoods. This supports what previous research has shown (see, for example, Brännström 2008). The fact that schools are of greater significance in this case is natural since schools, in addition to the social interaction between individuals with different socio-economic characteristics, also have different working methods and grade-setting routines that result in similarities in certificates within a school.

our estimated models of log education years.<sup>16</sup> In the analyses, we initially estimate the total differences in education between the first-generation immigrants, the second-generation immigrants, and children of Swedish origin (Model 0). The native-immigrant gap is approximately 5 percent for both first- and second-generation immigrants.

”Table 1 about here”

In Model 1a, we add the exogenous family characteristics: the level of parent’s education, a dummy variable indicating whether parental education was completed abroad, the number of children in the family (and their ages), and whether the parents live together or are divorced. The gap for the first generation is halved (from .052 to .027, i.e., reduced by 2.5 percentage points) and is reduced to one quarter (from .053 to .013, i.e., by 4 percentage points) for the second generation. The endogenous parental characteristics are added in the next step: disposable income and the mother’s and father’s employment status. Models 1a and 1b estimate the cumulative effects of the arrows 1a and 1b in Figure 1. In this step, the gap diminishes from .027 to .018 for the first generation and from .013 to .009 for the second generation. One should remember that this “explanation” also includes the potential effects of discrimination on the parents in the labor market. The difference between Model 0 and Model 1b is our measure of the total impact of the family of origin on the gap in education between children of immigrants and children of native Swedes and can be calculated to 3.4 respectively 4.4 percentage points. It is evident that the reduction in the gap is substantial, which indicates that the family of origin is an important factor behind the observed differences in education between the groups analyzed. For the first generation, the gap in educational attainment is less than two percent. For the second generation the remaining gap is close to zero.

In the next stage we account for the fact that neighborhoods distinguish themselves systematically according to the various characteristics of residents’ by including fixed effects for

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<sup>16</sup> We use linear regression for all outcomes, including the binary outcome of employments vs. non-employment. Although logit or probit is often recommended for binary outcomes, these estimators have specific shortcomings. Of importance for us is that it is difficult to compare coefficients across models (Karlson, Holm and Breen 2009; Mood 2009). Moreover, the OLS coefficients are, in essence, the average marginal effect obtained from a logit model, which for most purposes is the preferred effect measure (cf. Mood 2009). We also take into account the fact that individuals in the same residential area tend to be similar by using cluster-robust standard errors.

neighborhoods in models 2a and 2b. As explained above, we include fixed effects first without the endogenous family characteristics, which allows for neighborhood effects on the families' labor market position (Arrow 2b in Figure 1). In the next step, we include fixed effects after the endogenous family variables have been added into the model. Conditioning the fixed effects on the labor market status of parents might mute a part of the neighborhood effect if inferior labor market status is at least in part a consequence of segregation. Hence, we obtain two measures of the effects of residential segregation on the gap in educational careers between children of immigrants and children of natives. Models 2a and 2b estimate the cumulative effect of arrows 3a and 3b in Figure 1. Using this procedure, we obtain an interval between the minimum and maximum values estimated by these two models. Table 5 presents in detail the effects of neighborhoods for all outcomes by comparing the two methods of estimation of neighborhood effects.

As can be seen from the comparison of Model 1a with Model 2a the reduction in the educational gap for the first generation is .7 and 1.1 percentage points for the second generation. The corresponding reduction when comparing Model 1b with Model 2b is 0.6 and 0.8 percentage points, respectively. Thus, according to our estimates the neighborhood effects for the first generation are in the interval between 0.6 and 0.7 percentage points and for the second generation in the interval between 0.8 and 1.1 percentage points. Including fixed effects into the models raises the proportion of variance explained by about 3 percent. Thus, the residential segregation has some impact on the gap in educational careers between children of immigrants and children of natives, but relative to the family factors the effect is rather modest. It is also notable that the differences between our max and mean estimates are quite limited, which indicates that the potential influence of neighborhood segregation on parental labor market prospects does not mute the neighborhood effects on the future educational careers of children.

Finally, we add the grades from compulsory school into the model (Model 3). This gives us an estimate of the direct effect of grades on educational attainment, that is, an estimate of Arrow 4 in Figure 1. The results show that the impact of compulsory school grades on educational attainment is very strong, and that the effect of family conditions during adulthood on future educational is strongly reduced. This indicates that the educational career effect of the family of

origin is established at a relatively young age and then persists at the higher levels of the educational system. An additional analysis (not shown) indicates that a large proportion of the gap in educational attainment between children of immigrants and children of native Swedes can be attributed to the gaps in results at the compulsory school level.<sup>17</sup>

## **Employment**

Table 2 shows analyses of the gap in employment rates in adulthood between children of immigrants and those of Swedish background. As the method used is a linear probability model, the coefficients are interpreted as percentage point differences (divided by 100) of a one unit change in the independent variables. As can be seen in Model 0, the initial average differences in employment are striking: The first generation has about 13 percent and the second generation has more than 8 percent lower employment than do children of native Swedes.

“Table 2 about here”

The next step (models 1a and 1b), introduces the influence of the exogenous and endogenous measures of the socio-economic characteristics of the family of origin. In these models, we estimate the cumulative effects of arrows 1a, 1b, and 1c for differences in employment rates. Adding the exogenous (Model 1a) and endogenous family characteristics (Model 1b) shrinks the gaps considerably. The remaining gap in Model 1b is about six percent for the first generation and about 3.5 percent for the second generation, that is, the gaps are more than halved. When the neighborhood fixed effects are added (models 2a and 2b), the gap in employment between the groups shrinks somewhat. According to the estimates presented in Table 4, the reduction in the gap for the first generation is in the interval between 1.2 and 1.6 percentage points and between 1 and 1.3 percentage points for the second generation. The corresponding figures for the reduction in the gaps when using family exogenous variables for the first generation is 4.2 percentage points (.126-.084; column 1-column 2 in Table 2) and when using both exogenous and endogenous family variables 6.5 percentage points (.126-.061). For the second generation

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<sup>17</sup> Böhlmark (2008) shows that the difficulties that relatively newly arrived young people experience when they attend primary school are, at least in part, temporary. In a comparison between different groups of immigrant youths with regard to the highest level of education attained as adults, the recently arrived youths seem to catch up. We have analyzed how age of immigration affects various outcome variables (cf. Böhlmark 2008). Here, the importance of the age at immigration varied between outcomes in an unstable manner, which we interpret to mean that the immigrant group’s composition also varied.

analogous calculations of family of origin effects result in a shrinkage of 3.7 and 4.7 percentage points, respectively. Thus, our results indicate that the cumulative effects of the socio-economic resources of the family of origin on the future employment prospects are stronger than the effects of neighborhood during adolescence.

In the final step of the analysis, we add GPA from compulsory school (Model 3a) and educational attainment (Model 3b). This amounts to estimating the effects denoted in Figure 1 by arrows 4, 5, and 6. The gap in employment rates between the first generation and individuals of Swedish origin is somewhat reduced. For the second generation, the gap remains almost unaffected. This result is expected based on the results in Table 1. When analyzing educational attainment, we find that family resources and broader social environment, that is, neighborhoods, explain the whole gap in education between second-generation immigrants and children of Swedish origin. Thus, adding indicators of educational success into the model of employment when the cumulative effects of families and neighborhoods are already accounted for should not alter the results significantly.

However, it should be noted that the effects of GPA and educational attainment, although marginal for the gaps analyzed, are still relatively large in terms of the individual's prospects for employment. The proportion of variance explained in Model 3b is considerably larger than in Model 2b. One should also note that the signs of some coefficients in Model 3b are unexpected: the higher the parents' education, the lower the prospects for their children's employment. A plausible explanation for this outcome is that children from highly educated families tend to begin their working careers later than children from families with lower levels of education, even when individuals' own level of education is accounted for.

Finally, our results indicate that after all extensive controls have been added to the model, there still remains a gap in employment of more than 4 percents for the first generation and of 2.6 percents for the second generation. This result is in contrast to the results in Table 1 in which the remaining gap between children of immigrants and children from native families is almost completely explained away.

## Earnings

Turning to annual earnings above the threshold of 60,000 SEK (Table 3) gives a somewhat different picture. The gross earnings gap is approximately 9 percent for the first and about 4 percent for the second generation. For the second generation, when entering the exogenous family characteristics the whole gap is canceled out, and it fluctuates at about zero across all other model specifications. Thus, the cumulative effect of a family's education and demography (arrows 1a, 1b, and 1c in Figure 1) explains the entire earnings gap between children of immigrants born in Sweden and children born to native families.<sup>18</sup> An implication of this empirical finding is that neighborhood effects are of no importance in explaining differences in earnings between the groups.

The results for the first generation are different. Entering the exogenous family variables reduces the gap by 2.6 percentage points and the endogenous variables reduce the gap by an additional 1.5 percentage points. The remaining gap between first-generation immigrants and children of native Swedes is, however, approximately five percent. Introducing fixed effects into the model (models 2a and 2b) yields an estimate of neighborhood effects, which is in the interval between 0.6 and 1 percentage points. Thus, neighborhood segregation, when compared to family effects, appears, even in this analysis, to have a relatively limited effect on the gap between first-generation immigrants and people of Swedish background. Finally, when entering indicators of individuals' own education and previous educational performance, the gap for the first generation diminishes by approximately 1.8 percentage points, indicating that arrows 4, 5, and 6 are of some importance in this case. However, an earnings gap of 2.7 percent remains for the first generation after all controls are taken into account.

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<sup>18</sup> It should be emphasized that the fact that family background explains the earnings gap does not mean that individuals' own educations have no effect on the gap. On the contrary, differences in education between second-generation immigrants and people of native background can, at least partially, be attributed to differences in education. However, arrows 1a and 1b cover the portion of the influence of family of origin on earnings that is indirect and goes through educational attainment. Our results indicate, though, that arrows 4, 5, and 6 do not contribute to the explanation of the gap analyzed.

The results of the analyses of employment and of earnings differ to some extent. When we account for resources of families of origin, for the neighborhood, and for educational attainment the remaining gap in employment for the children of immigrants is higher than the gap in earnings. Children of immigrants seem to face problems when entering the labor market, but their situation seems to improve when they gain access to stable employment. This is especially clear for the second generation. Comparing the results from the educational analysis and analysis of employment indicates that gaps in employment are broader than gaps in educational attainment, and that differences between the groups in educational attainment do not explain the gaps in employment prospects.

### **Family vs. neighborhood explanations**

Table 4 shows the neighborhood effects calculated by comparing models 1a with 2a, and 1b with 2b in tables 1 to 3 (see footnote 13). The neighborhood effects are about 1 percentage point for education and approximately 1.5 percentage points for employment. For earnings, the effect is zero for second-generation immigrants and slightly below 1 percentage point for the first generation. The minimum and maximum figures are remarkably similar, which shows that there is little risk of over-controlling for family characteristics because of potential endogeneity between neighborhood and parents' employment prospects.

When comparing the family to the neighborhood, the reduction in the gap between children of immigrants and children with Swedish backgrounds in tables 1 to 3 is partially dependent on the order in which order variables are included in the regression models. In order to validate the results from our regressions, we conduct Blinder-Oaxaca decomposition whereby the total order-independent contributions can easily be calculated (Blinder 1973; Oaxaca 1973). The technique decomposes the total gap in explained differences and unexplained differences, and then the explained differences further by the different independent variables. The underlying principle is to compute the counterfactual outcome for children of immigrants using the same characteristics as individual of Swedish background, and vice versa, and to compare the outcomes. Because we found only minor differences in the neighborhood effects between models with and without

endogenous variables, we conduct the decomposition for models 2b in tables 1 through 3. Table 5 presents the results of the decomposition.<sup>19</sup> The independent variables have been grouped together under the following factors: neighborhood effects, graduation year and gender, parents education, family demography and parents employment and incomes.

The contribution to the gap in percentage point units between individuals of Swedish and immigrant origin is shown for each factor. The upper panel compares first-generation immigrants with individuals of Swedish background, and the lower panel compares second-generation immigrants with individuals of Swedish background. There are also differences in the returns to the different individual and family characteristics (the unexplained part), but these have been omitted in order to save space.

Since GPA and own education mediate the association between families and neighborhoods and outcomes, they are omitted (because otherwise we need to calculate how much of the effects that are mediated by GPA and own education, which requires additional statistical assumptions).

Family outperforms neighborhood as an explanatory factor in all models. The absolute level of the neighborhood contribution to the gap is, however, somewhat larger for education and employment compared to the results in Table 4. In terms of employment, the contribution is 2 percentage points for the first generation and 1.7 percentage points for the second generation. Table 4 thus slightly underestimates the contribution of neighborhoods. However, the family is still 2.5 times more important for education, close to 3 times more important for employment and more than 6 times as important for earnings. Of the family factors, the education of the parents is the most important factor, followed by the employment and incomes of parents. Family demography is of a relatively little importance.

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<sup>19</sup> We use the program developed by Jann (2008). In order to incorporate neighborhood fixed effects into the decomposition, a two-step procedure was necessary. First, predicted neighborhood effects were obtained from the last model of tables 1 through 3, and then this variable was entered as a linear regressor in the decomposition. The models produce exactly the same R2 and coefficients (the coefficient for the neighborhood effect was unity), but the standard error for the linearized neighborhood effects is flawed. This is negligible for the composition given the small standard errors in the models.

### **Additional analyses**

Another question is how the results differ for specific immigrant groups. Table A2 in the Appendix lists average values for parents' education, own education and own standardized education by country of origin.<sup>20</sup> The groups are ordered according to their size in the sample. The standardized measure shows the predicted education based on the family characteristics of the specific group. A value higher than the actual average education indicates that the group is faring less well than one would assume based on the educational and economic resources of parents.

In the second column, we see that parental educational resources differ vastly by country of origin. When it comes to the children in the next column, low level of education among parents often translates into lower levels of education for the children. The average number of years of education is low for young people originating from Turkey and Middle East countries, for example, as compared to the group of Swedish origin. For young people originating from Iran, some parts of Eastern Europe, and East Asia the number of years of education is relatively higher. As can be seen in the last column, a substantial part of the differences between countries of origin can be explained by the socio-economic resources of the family of origin. Nevertheless, children of Turkish descent, for example, still have relatively low educational attainment, even when one takes differences in parents' resources into account. For individuals of Bosnian and Iranian background the difference is reverse, and they have higher levels than expected based on the parents' resources.

The pattern is largely reproduced when it comes to employment and earnings (these results are not shown). Some notable deviations are that, the lowest levels of employment are found among people with African, Middle Eastern, and Iraqi backgrounds. Again, conditioning employment on parental resources results in a fairly large shrinkage in the

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<sup>20</sup> The country of origin means own birth country for the first generation and parent's birth country for the second generation. The variable measuring country of origin has been collapsed by Statistics Sweden into 28 categories, where relatively small neighboring countries and countries with language similarities have been grouped together. The categorization is not ideal as some groups are very heterogeneous with regard to the countries of origin (e.g., "Asia, other").

variation in employment rates between the countries of origin. However, the remaining differences, especially for people with parents born in African and Middle Eastern countries, are conspicuous, indicating that young people brought up in Sweden but originating from some specific non-European countries fare badly in the labor market.

Finally, we tried to establish what specific characteristics of neighborhoods have an impact on the future educational and labor market careers of young people brought up in Sweden. We substituted fixed neighborhood effects, by the observed characteristics of neighborhoods. For each SAMS area, we computed the proportion of first generation immigrants among 15-21-year-olds the proportion of welfare recipients, average education and earnings. The gap between the children from native families and the children of immigrants is, in our additional analyses, almost the same as in the fixed effect models (Model 2b, Table 1), indicating that the observed measures of the neighborhood capture a substantial part of the total effect of neighborhood segregation. The results are quite similar for the analyses of employment and earnings.

### *Discussion*

Sweden has been a country of immigration for quite some time; the number of immigrants has substantially exceeded the number emigrants. A consequence of recent waves of immigration is that increasing numbers of young people who have grown up in Sweden have their roots in other countries. This paper asks why young people of immigrant background raised in Sweden during the first half of the 1990s have less education, lower levels of stable employment, and lower earnings than their peers of native background.

General theories about social inheritance claim that inequality in different forms of resources in one generation results in inequality of social conditions in the next generation. If the position of immigrant parents in the society's stratification system is markedly different than that of Sweden-born parents, one may expect that these differences affect the future careers of the children. Beyond the relative lack of resources of the family of origin, resources in the community where the young people spend much

of their formative years can condition the various careers during adulthood. If residential segregation results in a situation in which children of immigrants and children of natives grow up under socially different circumstances, segregation can become an important factor that contributes to future differences between these groups. For the children of immigrants, ethnic residential segregation can mean that they only have limited contact with the majority population during childhood, and that this contact is limited to families of relative low social status. Thus, there is reason to believe that difference in future educational and labor market careers between children of immigrant parents and children of native parents are the result of an accumulation of social resources embedded in the families and in the local community where the children grow up.

In the empirical analysis, we shed light on the question of whether the mechanisms outlined above actually contribute to our understanding of the differences between the groups in the educational system and on the labor market. We follow all young people who completed compulsory school from 1990 to 1995 over time and study their educational attainment and labor market outcomes for the year 2007.

Our findings indicate that the most powerful factor underlying the differences in educational careers between children of Swedish and immigrant backgrounds are found in the educational and economic resources of the family of origin. The differences arise during relatively early phases of the school experience and continue into the higher levels of the educational system. Residential segregation during childhood explains some but a rather limited part of the differences between the groups with regard to future educational careers. The remaining differences in educational attainment are rather small after controlling for family resources.

The gross differences in the employment status, however, are very large. The influence of family of origin on future employment prospects is again clearly stronger than the influence of neighborhood segregation. The remaining gaps in employment between the groups are relatively large, especially for the first generation, even after all extensive controls have been accounted for. Analyzing earnings gives a different picture. For the

second-generation immigrants, there is initially a gap in earnings, but when controls for parental resources are included the gap vanishes. For the first generation, however, the initial gap is large and the remaining gap is quite substantial. The effects of residential segregation on the individual's future earnings are small or nonexistent.

Educational success is largely dependent on the individual's own capacity and the individual's choices. These choices are not made in a social vacuum, but instead are influenced by the family's economic and cultural resources as well as the family's strategies for transferring these resources to the next generation. With regard to employment, the individual's capacity and choices are of importance, but it is in the interaction between the employer and the individual that the latter's resources are valued, and the employer plays a decisive role in the process. A possible explanation for the differences in labor market outcomes between first-generation immigrants and persons of Swedish background that remain when differences in various forms of individual resources are accounted for is that the groups are treated differently by employers. Migration to a new country results in difficulties for children and young people. Our results indicate that such difficulties are not limited to the period directly following immigration. After completed education, new obstacles arise when educational resources are to be converted into a stable employment. Our results also indicate that these obstacles exist upon the entry into the labor market even for the children of immigrants born in Sweden. The fact that the income differences are small for the gainfully employed between second-generation immigrants and people from native families indicates that when the individuals of the second generation succeed in establishing themselves in the labor market, ethnic origin plays a limited role for rewards.

Finally, it should be emphasized that the data about residential segregation during childhood used in this paper derive from the period between 1990 and 1995. It is not unreasonable to maintain that local communities have in recent years had stronger and long-lasting consequences on young peoples' futures as a result of the increasing ethnic and socio-economic housing and school segregation. On the other hand, there is no

reason to believe that the influence of the family's "long arm" on the opportunities available to the young people will weaken.

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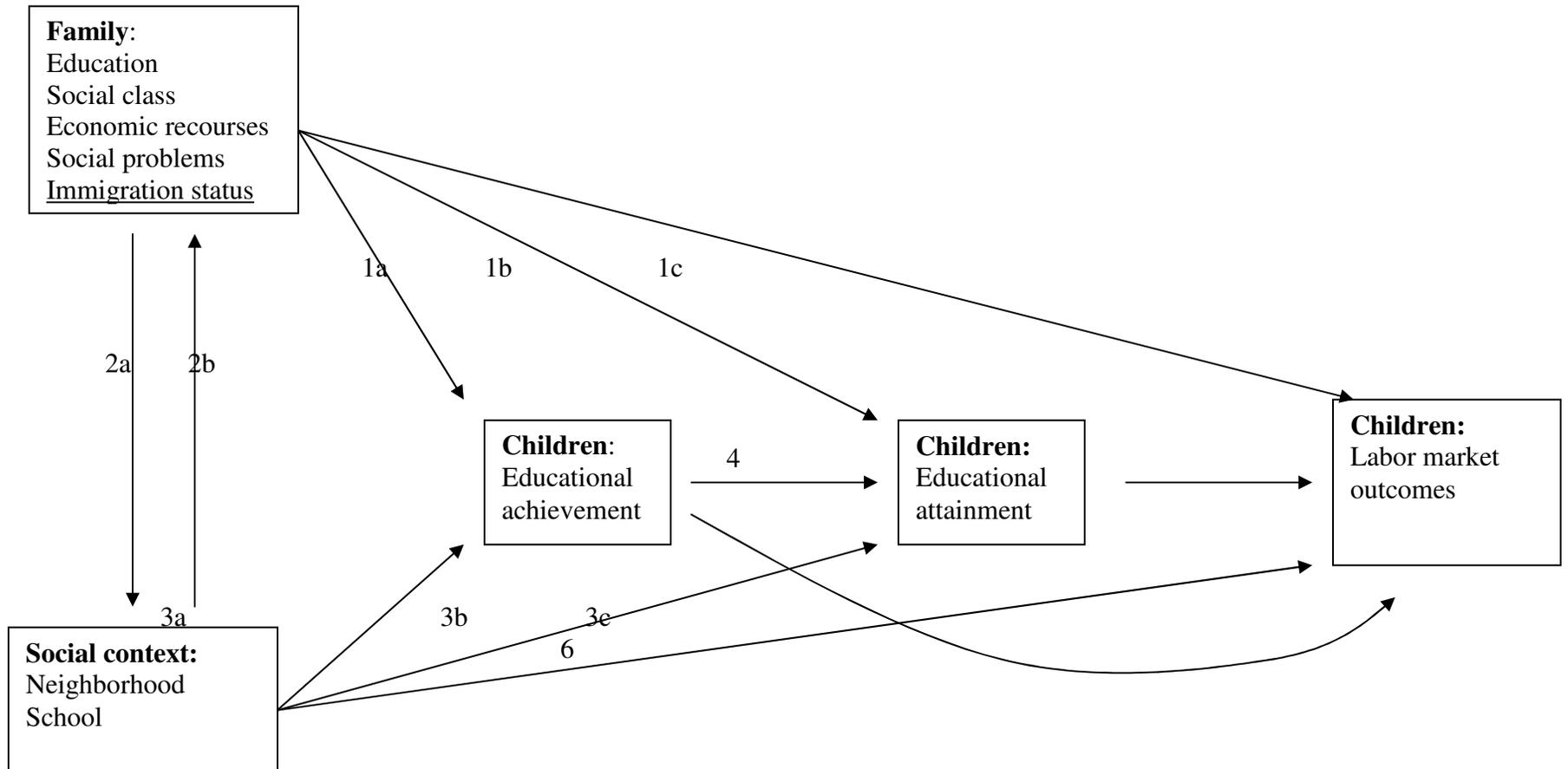
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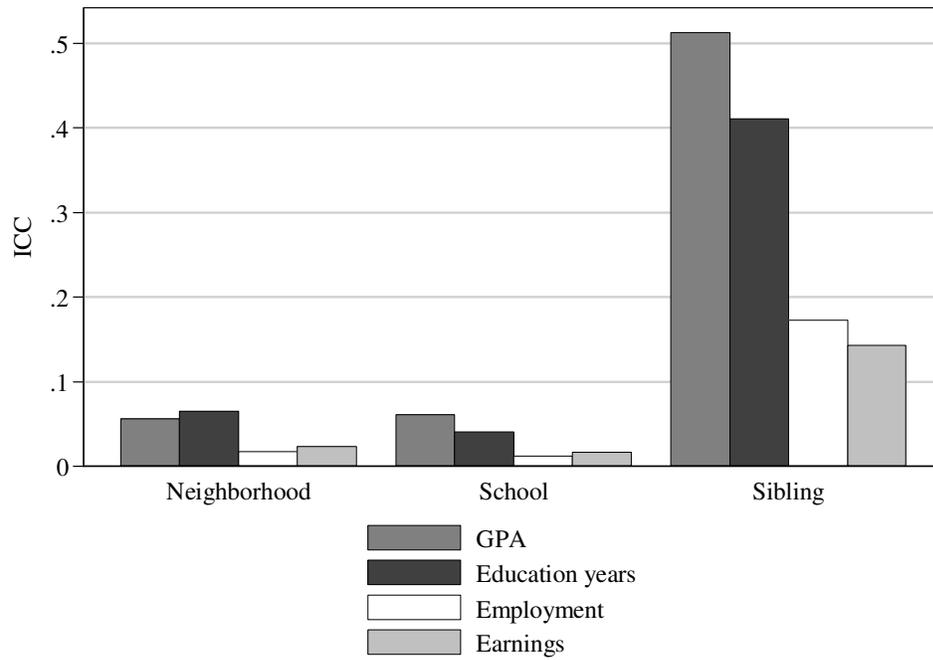
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**Figure 1. Factors that reproduce social inequality.**



**Figure 2. Intra-class correlations for log years of education and earnings for neighborhood, school, and family (siblings).**



Note: the intra-class correlations are estimated by the ANOVA method, and represent the maximum influence of the factors, not conditioned on any other covariates.

**Table 1. Regression of ln education years in 2007 on immigrant status, family of origin characteristics and neighborhood. OLS with cluster-robust standard errors.**

	0	1a	1b	2a	2b	3
First generation	-0.052**	-0.027**	-0.018**	-0.020**	-0.012**	0.003**
Second generation	-0.053**	-0.013**	-0.009**	-0.002*	0.001	-0.004**
Single father		-0.048**	-0.037**	-0.043**	-0.033**	-0.012**
Single mother		-0.045**	-0.032**	-0.038**	-0.027**	-0.007**
Number of other children (0-6) in family		-0.026**	-0.025**	-0.023**	-0.023**	-0.010**
Number of other children (7-15) in family		0.001**	-0.000	0.002**	0.000	-0.001**
Number of other children (16+) in family		0.001	-0.004**	0.000	-0.004**	-0.001**
Parents' education completed abroad		-0.008**	-0.005**	-0.003**	-0.001	0.001*
Parents' education: Non-academic US		0.031**	0.027**	0.029**	0.025**	0.013**
Parents' education: Academic US		0.082**	0.075**	0.076**	0.071**	0.030**
Parents' education: Post-sec		0.108**	0.100**	0.101**	0.094**	0.044**
Parents' education: Tertiary		0.166**	0.154**	0.155**	0.145**	0.068**
Parents' education: Post-grad		0.213**	0.198**	0.196**	0.185**	0.091**
Ln disposable family earnings			0.021**		0.019**	0.008**
Employed father			0.015**		0.013**	0.004**
Employed mother			0.018**		0.016**	0.005**
GPA (pce) at 9th grade						0.126**
Neighborhood fixed effects				X	X	X
Constant	2.529**	2.468**	2.281**	2.470**	2.299**	2.048**
Observations	567633	567633	567633	567633	567633	567633
R-squared	0.028	0.175	0.182	0.205	0.210	0.454
Adj R2	0.0275	0.175	0.182	0.193	0.198	0.446
# Neighborhood FEs				8543	8543	8543

Note: Controls for sex and year and graduation year not shown. \* p<.05 \*\* p<.01

**Table 2. Regression of employment status (earnings above 60') in 2007 on immigrant status, family of origin characteristics and neighborhood. Linear probability model (OLS) with cluster-robust standard errors.**

	0a	1a	1b	2a	2b	3a	3b
First generation	-0.126**	-0.084**	-0.061**	-0.067**	-0.049**	-0.042**	-0.041**
Second generation	-0.082**	-0.045**	-0.035**	-0.033**	-0.024**	-0.027**	-0.026**
Single father		-0.040**	-0.021**	-0.034**	-0.016**	-0.006**	-0.001
Single mother		-0.052**	-0.032**	-0.040**	-0.022**	-0.012**	-0.008**
Number of other children (0-6) in family		-0.022**	-0.017**	-0.020**	-0.017**	-0.010**	-0.006**
Number of other children (7-15) in family		-0.001	-0.002**	-0.002**	-0.003**	-0.004**	-0.003**
Number of other children (16+) in family		0.002**	-0.002*	0.001	-0.003**	-0.002*	-0.001
Parents' education completed abroad		-0.038**	-0.032**	-0.033**	-0.028**	-0.027**	-0.026**
Parents' education: Non-academic US		0.014**	0.004*	0.013**	0.004**	-0.002	-0.006**
Parents' education: Academic US		0.025**	0.010**	0.023**	0.011**	-0.010**	-0.016**
Parents' education: Post-sec		0.025**	0.007**	0.023**	0.009**	-0.017**	-0.024**
Parents' education: Tertiary		0.017**	-0.005**	0.019**	0.000	-0.040**	-0.048**
Parents' education: Post-grad		-0.001	-0.028**	0.011**	-0.011**	-0.060**	-0.068**
Ln disposable family earnings			0.022**		0.022**	0.016**	0.014**
Employed father			0.046**		0.042**	0.037**	0.034**
Employed mother			0.052**		0.047**	0.042**	0.037**
GPA (pce) at 9th grade						0.063**	0.031**
Own education: Compulsory school							-0.164**
Own education: Unfinished Upper Secondary							-0.062**
Own education: Other Upper Secondary							-0.108**
Own education: Academic Upper Secondary							-0.015**
Own education: Post-secondary							-0.010**
Own education: Tertiary							0.040**
Own education: Post-graduate							-0.042**
Neighborhood fixed effects				X	X	X	X
Constant	0.920**	0.920**	0.668**	0.917**	0.670**	0.544**	0.692**
Observations	523,921	523,921	523,921	523,921	523,921	523,921	523,921
R-squared	0.012	0.020	0.027	0.043	0.049	0.067	0.089
Adj R2	0.0125	0.0199	0.0271	0.0275	0.0337	0.0518	0.0735
# Neighborhood FEs				8523	8523	8523	8523

Note: Controls for sex and year and graduation year not shown. The reference category for the educational dummies is vocational secondary education \* p<.05 \*\* p<.01

**Table 3. Regression of ln annual earnings above 60' in 2007 on immigrant status, family of origin characteristics and neighborhood. OLS with cluster-robust standard errors.**

	0a	1a	1b	2a	2b	3a	3b
First generation	-0.091**	-0.066**	-0.051**	-0.056**	-0.045**	-0.028**	-0.027**
Second generation	-0.042**	-0.001	0.004	-0.001	0.003	-0.004	-0.004
Single father		-0.049**	-0.024**	-0.044**	-0.025**	-0.001	0.003
Single mother		-0.045**	-0.016**	-0.039**	-0.016**	0.006**	0.009**
Number of other children (0-6) in family		-0.033**	-0.033**	-0.029**	-0.029**	-0.014**	-0.011**
Number of other children (7-15) in family		-0.005**	-0.010**	-0.003**	-0.006**	-0.008**	-0.008**
Number of other children (16+) in family		-0.007**	-0.019**	-0.008**	-0.017**	-0.014**	-0.014**
Parents' education completed abroad		-0.004*	-0.000	-0.011**	-0.008**	-0.006**	-0.006**
Parents' education: Non-academic US		0.030**	0.023**	0.027**	0.022**	0.008**	0.004*
Parents' education: Academic US		0.100**	0.087**	0.084**	0.075**	0.028**	0.019**
Parents' education: Post-sec		0.114**	0.098**	0.097**	0.086**	0.028**	0.013**
Parents' education: Tertiary		0.175**	0.151**	0.147**	0.131**	0.039**	0.015**
Parents' education: Post-grad		0.218**	0.186**	0.177**	0.155**	0.042**	0.011*
Ln disposable family earnings			0.057**		0.045**	0.032**	0.030**
Employed father			0.018**		0.016**	0.008**	0.007**
Employed mother			0.025**		0.022**	0.013**	0.011**
GPA (pce) at 9th grade						0.150**	0.105**
Own education: Compulsory school							-0.049**
Own education: Unfinished Upper Secondary							-0.061**
Own education: Other Upper Secondary							-0.072**
Own education: Academic Upper Secondary							0.019**
Own education: Post-secondary							0.037**
Own education: Tertiary							0.127**
Own education: Post-graduate							0.078**
Neighborhood fixed effects				X	X	X	X
Constant	5.671**	5.613**	5.145**	5.622**	5.247**	4.932**	5.071**
Observations	467,762	467,762	467,762	467,762	467,762	467,762	467,762
R-squared	0.117	0.143	0.148	0.170	0.173	0.225	0.237
Adj R2	0.117	0.143	0.148	0.155	0.158	0.210	0.223
# Neighborhood FEs	.	.	.	8495	8495	8495	8495

Note: Controls for sex and year and graduation year not shown. The reference category for the educational dummies is vocational secondary education \* p<.05 \*\* p<.01

**Table 4. Estimates of minimum and maximum neighborhood effects on the immigrant-native gap in 2007.**

	First		Second	
	Min	Max	Min	Max
Ln education years	0.006	0.008	0.010	0.011
Employment	0.012	0.016	0.010	0.013
Ln earnings > 60'	0.006	0.010	-0.001	0.000

Note: The effects are estimated by comparing coefficients from a model with and without neighborhood fixed effects. The maximum is obtained by comparing the immigrant dummy from a model without potentially endogenous labor market characteristics of parents (1a vs 2a), and the minimum from a mode including potentially endogenous labor market characteristics of parents (1b vs 2b).

**Table 5. Oaxaca decomposition of education, employment and earnings in 2007.**

Swedish vs. First generation	Education	Employment	Earnings
Neighborhood (FE)	0.011**	0.029**	0.017**
Gender, graduation year	0.003**	0.003**	0.006**
Parents' employment and income	0.012**	0.021**	0.007**
Family demography	0.000	0.001**	0.010**
Parents' education	0.016**	0.029**	0.020**
Total explained	0.042**	0.084**	0.060**
Unexplained	0.010**	0.044**	0.041**
GAP (Swedish - First)	0.052**	0.128**	0.101**
Total Family	0.030	0.061	0.043
Total Neighborhood	0.012	0.021	0.007
Relation Neighborhood: Family	2.5	2.9	6.1
Swedish vs. Second generation	Education	Employment	Earnings
Neighborhood (FE)	0.009**	0.020**	0.013**
Gender, graduation year	0.003**	0.002**	0.003**
Parents employment and income	0.016**	0.017**	-0.000
Family demography	0.001**	0.001**	0.003*
Parents' education	0.028**	0.022**	0.031**
Explained	0.056**	0.061**	0.049**
Unexplained	-0.002	0.022**	-0.005
Gap(Swedish - Second)	0.054**	0.083**	0.045**
Total Family	0.040	0.044	0.047
Total Neighborhood	0.016	0.017	-0.00
Relation Neighborhood: Family	2.5	2.6	-

**Supplementary table A. Descriptive statistics by immigrant group.**

Variable	Swedish	First generation	Second generation
ln earnings 2007 (above 60')	5.503	5.399	5.458
Employed 2007 (earnings above 60', 1 = yes; 0 = no)	0.902	0.770	0.816
ln education year 2007	2.555	2.501	2.501
GPA rank 9 <sup>th</sup> grade (0 – 1)	0.510	0.394	0.448
Woman (1 = yes; 0 = no)	0.487	0.504	0.487
Single father (1 = yes; 0 = no)	0.041	0.033	0.034
Single mother (1 = yes; 0 = no)	0.170	0.222	0.241
Number of other children (0-6) in family	0.134	0.239	0.166
Number of other children (7-15) in family	0.615	0.877	0.641
Number of other children (16+) in family	0.395	0.467	0.469
Parents' education completed abroad (1 = yes; 0 = no)	0.089	0.965	0.826
Parents' education: Elementary	(reference)	(reference)	(reference)
Parents' education: Non-academic US	0.342	0.280	0.389
Parents' education: Academic US	0.151	0.083	0.092
Parents' education: Post-sec	0.167	0.152	0.097
Parents' education: Tertiary	0.196	0.161	0.084
Parents' education: Post-grad	0.015	0.017	0.010
ln disposable family earnings	7.845	7.654	7.712
Employed father (1 = yes; 0 = no)	0.893	0.546	0.679
Employed mother (1 = yes; 0 = no)	0.906	0.612	0.738
Basic Education	0.072	0.143	0.138
Unfinished Up. Sec.	0.039	0.066	0.056
Other Up. Sec.	0.012	0.043	0.022
Vocational education (reference)	(reference)	(reference)	(reference)
Academic Up. Sec.	0.133	0.131	0.158
Post-secondary	0.214	0.203	0.177
Tertiary	0.246	0.153	0.159
Post-graduate	0.006	0.003	0.003
Observations	537,330	35,527	27,985

**Supplementary table B. Population size, average education of parents, children's' education and GPA by country of origin.**

Country	N	Parents' years of education	Childrens' education in 2007	Childrens' education in 2007, standardized
Sweden	536,411	12.2	13.1	13.0
Finland	14,662	10.5	12.2	12.4
Ex-Yugoslavia excl. Bosnia-Hercegovina	5293	10.2	12.3	12.3
Turkey	4410	8.5	11.7	11.9
Poland	3095	12.6	13.0	12.8
Chile	3016	11.0	12.0	12.3
Iran	2835	12.0	13.2	12.6
Middle East: United Arab Emirates, Bahrain, Gaza, Jordan, Kuwait, Lebanon, Palestine, Qatar, Saudi Arabia, Syria, South Yemen, West Bank, Yemen	2749	8.9	11.8	11.9
Southern Europe: Gibraltar, Greece, Italy, Malta, Portugal, San Marino, Spain, the Vatican	1721	9.4	12.5	12.2
Denmark	1538	11.6	12.2	12.6
South East Asia and Oceania Myanmar, Philippines, Indonesia, Laos, Malaysia, Thailand, Vietnam, East Timor, and countries in Oceania	1536	8.4	12.1	12.0
Eastern Europe 2: Slovakia, Czech Republic, Hungary	1471	12.6	13.0	12.8
Eastern Europe 1: Albania, Bulgaria, Romania, Ex-Soviet Union (excl. the Baltic states)	1360	13.0	13.1	12.9
Norway, Iceland	1355	11.1	12.2	12.4
South America excl. Chile	1160	12.2	12.5	12.6
Djibouti, Eritrea, Ethiopia, Somalia, Sudan	829	9.8	11.8	12.0
Iraq	819	11.1	12.2	12.3
Bosnia-Hercegovina	744	11.5	12.6	12.3
Germany, GDR, Liechtenstein, Netherlands, Switzerland, Austria	734	12.5	12.8	12.8
Asia, other: Asian countries other than the ones above	685	11.4	13.0	12.5
Africa, other: African countries other than the ones above	660	10.9	12.0	12.2
East Asia: Hong Kong, Japan, China, Korea, Taiwan, Singapore, Israel	407	10.4	13.4	12.4
North Africa: Algeria, Egypt, Morocco, Tunisia	390	10.0	12.4	12.1
Great Britain, Ireland	323	11.0	12.9	12.5
North America (excl. Canada, USA) incl. Central America	287	10.5	12.1	12.2
Estonia, Latvia, Lithuania	107	13.3	13.3	13.1
Canada, USA	98	13.8	13.0	13.1
Europe, other: European countries other than the ones above	64	13.2	13.0	13.0
Australia, New Zealand	14	12.3	12.6	12.9
Unknown	4	10.3	14.7	11.8
<b>Total</b>	<b>588,777</b>	<b>12.1</b>	<b>13.0</b>	<b>13.0</b>

Note: Parents' years of education has been coded to the Swedish standard (elementary level = 9 years of education). The differences are thus underestimated, especially for countries with underdeveloped educational systems. The standardized measure is the predicted values based on coefficients from a regression of children's education on family characteristics for individuals of Swedish background.



## The Stockholm University Linnæus Center for Integration Studies (SULCIS)

SULCIS is a multi-disciplinary research center focusing on migration and integration funded by a Linnaeus Grant from the Swedish Research Council (VR). SULCIS consists of affiliated researchers at the Department of Criminology, the Department of Economics, the Department of Human Geography, the Department of Sociology and the Swedish Institute for Social Research (SOFI). For more information, see our website: [www.su.se/sulcis](http://www.su.se/sulcis)

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