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Is the neighbourhood-effect an economic or an immigrant issue? A study of the importance of the childhood-neighbourhood for future integration into the labour market.¹

Introduction

Within the social sciences of studies of social exclusion, the search for a specific cause in order to be able to cure and correct malfunctions or disorders in society has a long history. The question of the effects of social and spatial context was never silenced and has in later years gained renewed interest. In research, as well as in policy, the cause of advanced social exclusion deeply connected with “race” has been more specifically localised to so-called segregated areas, which have been added to other well-established causes such as “social heritage”, “ethnic capital”, and “ethnic discrimination”. There are several arguments for why the neighbourhood where a person grows up could be important for his or her integration in the labour market.

The main question in this article is not *whether* there is a neighbourhood-effect. Several studies of virtually the same dataset have already concluded that there is (R. Andersson 2001, E. Andersson 2004, Musterd et al forthcoming). The aim of the study is to separate and relate general impacts of the economic standard in a neighbourhood and its ethnic composition. The effect, in this case, is being measured as integration in the labour market. To avoid drawing conclusions about effects from

neighbourhood level characteristics that are nothing more than the aggregation of family and individual level characteristics, the neighbourhood here is the neighbourhood in which the cohort born 1974 or 1975 lived in 1991. The main focus is on the outcome measured eight years later (1999), but outcomes 13 year later (2004) are also discussed. The study uses data compiled from a number of Swedish public registers.

A short review of the most relevant theoretical discussions on this matter are to be found in the next section. Hypotheses about the impacts of economic and ethnic composition of the neighbourhood are also presented. Some previous results of relevance are then discussed. In the following section, the national context is presented. This is followed by the empirical section of the article, which begins with a discussion of methodological considerations as well as a presentation of the dataset and the variables used. After that, there is a presentation of results. The article ends with a concluding discussion.

Theoretical discussion and hypotheses about impacts of economic and ethnic composition of the neighbourhood

Theories of neighbourhood effects became the subject of renewed interest, inspired by, among other things, the book *The Truly Disadvantaged* by Julius William Wilson (1987). Since then, American scholars have made a large number of contributions to the discussion, using various statistical sources and methods in order to test the effects of neighbourhoods over and above individual or parental characteristics as well as the effects of “ethnic capital”² (e.g. Borjas 1995). One important problem is that studies of neighbourhood effects primarily involve research in North America where problems of race and segregation have a long history, very different from European and Swedish developments (Schierup 2006). Without mentioning all of the studies from the USA, it

can be pointed out that neighbourhood effects in Europe seem to be smaller than in the USA. This is understandable, given the differences in regard to welfare policies, social security systems, governmental transfers, municipal supports, etc. However, a number of more recent European studies have also discussed neighbourhood effects (e.g, Forrest and Kearns 2001, Skifter Andersen 2003, Friedrichs et al 2003, Musterd 2004, MacDonald et al 2005, Musterd et al 2006, Musterd et al forthcoming), and European perspectives are being further developed.

The point of departure for studies on neighbourhood effects is an assumption that the housing area that people live in, or grow up in, matters for their future life over and above family background and individual capacities and discrimination. The assumption of local social life being one determinant of the socio-economic outcomes of inhabitants has given rise to a large number of studies of so-called ‘contextual’ or ‘neighbourhood’ effects. It is beyond the scope of this article to present a comprehensive review of the discussion on different causes of neighbourhood-effect. (for such reviews, see e.g Jencks and Mayer 1990, Borjas 1995, Ellen and Turner 1997, Brooks-Gunn et al. 1997, Leventhal and Brooks-Gunn 2000, Buck 2001, Sampsson et al 2002, Brännström 2006).³

The most frequent arguments include different kinds of social interactions: collective socialisation, impact of role models, collective efficacy, social control and relative deprivation. Institutional models, in which the institutions of the neighbourhood (e.g. schools) affect differences in young people’s development, are also important (Jencks and Mayer 1990). Wilson (1987, 1997) and others include changes in economic structure in the theory of why and how social characteristics of the neighbourhood influence its inhabitants and reinforce social inequality within cities. Skifter Andersen (2003) highlights self-perpetuating processes of deprivation and decay that take place in

”vulnerable housing estates”, which may reinforce social segregation. Consequences of stigmatisation of housing areas are an important part of this process.

For the purposes of this article, the arguments used in the literature can be summarised in two groups:

1. Arguments primarily based on local economic conditions: a) Culture hypothesis: People living in poor areas may develop local moral standards that are anti-work and pro-social support and/or pro more or less criminal activities; b) Social network hypothesis: Local networks in poor areas might not have appropriate role models and information that are conducive to inclusion in the labour market; c) Institutional hypothesis: Schools and other important institutions may withdraw or degenerate in quality under adverse economic circumstances.

2. Arguments primarily related to immigrant density: a) Language hypothesis: a higher proportion of immigrant populations will make it more difficult to learn the language and to gain access to country specific knowledge and to valuable social capital; b) Ethnic multiple deprivation hypothesis: a concentration of groups that are discriminated in the labour market will enhance feelings of exclusion and reduce expectations in regard to possibilities of obtaining adequate work, which in turn affects ambitions in seeking work and c) The white-flight hypothesis: a higher proportion of immigrant populations will exacerbate the bad reputation of the area, and the more well-off native population will flee the area. The arguments that relates to immigrant density mainly concerns immigrants themselves, but are also considered to enhance effects mentioned as economic conditions. E.g the language problem might have an impact on learning and teaching in schools, multiple deprivation will put extra demands on social service in the area as well as effecting all of the above mentioned arguments based on

economic conditions and white-flight will have an impact on the total remaining population.

There are also counter arguments regarding positive effects of ethnic clusters, including opportunities for ethnic businesses and use of “ethnic capital” (e.g Portes 1995, Borjas e.g 1998). In this article I will not focus on separate ethnic groups but will discuss on a more general level whether it is possible to identify a negative or positive impact for the entire population (not only immigrants) of concentrations of immigrants.

The assumption is that people who grow up in a poor – or in a so-called “immigrant-dense” – area will encounter more difficulties becoming established in the labour market than will people with the same background that grow up in rich “immigrant-scarce” areas. If there is in fact no additional neighbourhood-effect, differences between average income, unemployment, and so forth might instead be explained by socio-economic background and ethnic discrimination, which would affect people in the same way even if they were randomly distributed within the city.

Emphasis on arguments on economic conditions or on immigrant density may have different impacts on the conclusions and policy. Therefore, it seems important to try to separate effects related to an “ethnic” context from effects related to a socio-economic context.

The lower incomes and higher unemployment rates of immigrants are, of course, important to take into consideration as a significant background to the ”effects” of immigrant density. The problem is that these two sets of assumed effects – the problem of socio-economic deprivation and the problem of immigrant density – are strongly correlated with each other, since the clustering of immigrants tends to coincide with the clustering of poverty (at least in Sweden). However, proportions of foreign born residents and various arithmetic means of socio-economic status in neighbourhoods are

not perfectly correlated with each other. This opens up for some opportunities for analysing their relative importance, even though we can not say which comes first since they, of course, operate in parallel and are mutually connected. The question is, first, if the neighbourhood can explain some of the variation in socio-economic outcome, while controlling for individual and family characteristics, and, second, whether it is ethnic composition or socio-economic composition that is most important in explaining neighbourhood level variation in socio-economic outcome.

This study will investigate and discuss how the ethnic and socio-economic composition of the neighbourhood in which people have been brought up in Stockholm county affects their entrance to the labour market in 1999 for a cohort born in 1974 and 1975. The cohort are 24 and 25 years old in 1999. Since the age for being established at the labourmarket is about 26 for men and 27 for women (Salonen 2003), the ages 24 and 25 represent a stage in life where preparations of ones first steps into the labourmarket are made. The position in this “pre-phase” can have an impact on future possibilities in the labourmarket, but can not be considered as determining final positions. The outcomes for 2004 is also discussed, but emphasize will be on outcomes in 1999.

Previous findings in Sweden

There is good access to data registers and to large surveys in Sweden. The main results from studies in Sweden on neighbourhood effects on the total population (Andersson 2001, Hedström et.al. 2003, Andersson 2004, Mood 2004, Integrationsverket 2004, Andersson 2006, Brännström 2006, Musterd and Andersson 2006) are that the socio-economic composition of the neighbourhood has a general effect on individual economic outcomes, such as unemployment, income, and public assistance allowances. However, the results also indicate that neighbourhood influences are limited in

comparison to family influences in accounting for individual differences. These studies did not include the ethnic context.

General differences of grades by schools in 2003, after control for individual background account for about five percent of the variations between schools (Skolverket 2005) and is increasing (Skolverket 2006). Dryler (2001) reports that immigrant density in schools, after control for socioeconomic composition in schools, reduces grades and increases drop-out rates but also increases the odds to choose theoretical profile at upper secondary school instead of practical for the general population. The Swedish National Agency for Education (Skolverket 2006) concludes that socioeconomic as well as immigrant compositions in schools have a small but significant negative effect on grades both on natives and pupils with foreign background.

The socioeconomic background and time in the country explains a large extent of the difference between grades in elementary school of students with foreign background compared to grades of natives. Differences between contextual effects between schools with different immigrant density for pupils with immigrant background is almost fully explained by socioeconomic difference, with exception of the 10th percentile most immigrant dense schools that gave extra negative effect on grades after control for individual and family characteristics as well as socioeconomic characteristics of the schools (Skolverket 2004). Szulkin and Jonsson (2005) conclude from a study of schools that the ethnic composition in schools affects grades for immigrants. The effect of the school on grades was about 5 percent of the total variation in grades, and this variation was explained almost entirely by ethnic composition. The explanation of effects from socioeconomic and ethnic composition of schools for both natives and immigrants is of relevance for outcomes on the labour market. It is however not clear in what way outcomes such as grades will have a longer term impact on labour market

outcomes.

Studies on effects on immigrants of ethnic enclaves or of immigrant density on labour market outcomes show different results. Edin et al. (2003) presents data that suggest that ethnic enclaves improve labour market outcomes for less skilled immigrants. Grönqvist (2006) finds that the size of the ethnic enclaves negatively affects the probability of graduating from higher education, but not on earnings. A problem with these two studies is the large areas (municipalities) used as social context.

A study by Musterd et al (forthcoming) shows that residence in a local neighbourhood (defined as surrounding 500x500 square meter for each individual) in the three largest metropolitan areas in Sweden with large numbers of own-group members is positively related to subsequent income for immigrants in a short time perspective but negatively related in a longer time perspective, after controlling for a number of individual characteristics as well as the percentage unemployed in the area. This result highlights the importance of taking time as well as outcomes into consideration when synthesising these results. Musterd et al argue that negative aspects of ethnic concentration appear to increase with longer staying times in the area. It would then be reasonable to believe that ethnic concentrations in the area that a person grows up in could have an even greater negative impact on labour market career.

National context

The discussion on *the effects* of ethnic housing segregation – different levels of immigrant density or native scarcity – must be considered in light of ethnic segregation in the labour market, how and why immigrant-dense areas are formed.

The immigrant population in Sweden has a diverse ethno-national background, ranging around the globe. Immigrants from the other Nordic countries were most numerous by

the late 1970s, but from the early 1980s migrants from Asia, Africa, and Eastern Europe have made up the majority of migrants to Sweden. In 1990 9,2 percent of the total population was born abroad (www.scb.se). The largest migrant groups in the total dataset of inhabitants in Stockholm county in 1990 was born in Finland, Poland, Germany, Chile, Iran and Turkey.

Although most immigrants arrive because of family reunions or as refugees and there is no labour market testing to obtain residence permit, the level of education among immigrants are high. In spite of the high level of education current structural parameters of social exclusion affecting immigrants (from outside the European Union and the OECD area) in the labour market in Sweden can be compared to the exclusion of Blacks and Hispanics in the USA (Edin et.al. 2003, Integrationsverket 2003). It is well documented that inhabitants of Sweden who have been born abroad have lower incomes and are unemployed to a much greater extent than natives (Integrationsverket 2003, 2005 and 2006). However, housing segregation in Sweden is not fully comparable to the situation in the USA. Continuous and highly diversified immigration did not result in ethnic enclaves or large clusters of people with the same country of origin, similar to traditional ethnic enclaves in the USA (Wacquant 1993, Bunar 2000). The restructuring of cities resulting from industries located in the central districts moving to the outskirts has not had the same impact as in the USA. Since the time of the so-called “million program” – when one million homes were built, mostly in suburbs (1964-1975) – poor housing areas in Sweden have often been located outside of the cities, closer to industrial areas and to well-developed public transportation. Poorer housing areas in large Swedish cities contain a mixture of different ethnic groups and do not exhibit the same degree of institutional breakdown, vandalism, abandoned buildings, and drug related problems as the inner city ghettos in Los Angeles, as described e.g. by Davis

(1998). The redistributive welfare state is also of importance in the presumption that the neighbourhood would not have such a strong effect in Sweden (Hamnet 2003, Musterd and Murie 2006).

Increases in the demands on education and skills by the urban economy is often advanced as one explanation for higher levels of unemployment among immigrants. This may be true in part for some groups of labour immigrants from the 1970s but not for refugees arriving later, who generally have a high level of education (see Schierup 2006 for further discussion of this topic). It is well documented that lower status in the labour market among residents of foreign origin cannot be explained by lack of education or by social background (e.g. Cohn 2000, Hjerm 2002, Ekberg 2004). The overrepresentation of immigrants in poorer housing areas and in rented flats can only partially be explained by socio-economic factors. On this basis, scholars have increasingly begun to explain differences in income as well as in housing in terms of structural discrimination (Molina 1997). Racial or ethnic discrimination in the labour market seems to be a most important cause of ethnic housing segregation, as well as discrimination in the housing market (Molina 2006). Structural changes of cities and the need for qualified labour seem to be of relatively lesser importance.

The beginning of the 1990s was marked by a sudden increase in and, for Sweden, extremely high level of unemployment among immigrants and their children (Andersson 1998, Schierup et.al 2006). Area-based statistics were important in arguments for government and municipality initiated area-based projects to counteract the effects of segregation (e.g. Storstadskommittén 1997). During the 1990's there have been a range of government and municipal initiatives designed to counteract effects of ethnic and socio-economic housing segregation. In the second part of the 1990's there was an upswing in the economy, and unemployment was reduced. However, the

inequality between immigrants and natives was still significantly larger in 1999 than in 1990 (Urban 2007). It is, of course, difficult to know what would have happened without the exceptional economic circumstances and governmental “interventions” The outcomes in this study are, however, measured in the year before the large-scale “big city policy” was introduced.

Methodological considerations

This study will have the advantage of using large longitudinal registers, but although the database includes a wide range of measures, it can neither capture the quality nor the quantity of social relations in the neighbourhood. Duncan and Raudenbush (1999), for example, discuss effects of contexts in studies of child and youth development, which will in turn affect future opportunities in the labour market. They conclude that the most important analytical problems are: 1. Measurement problems: missing information on informal social control, social cohesion, role models, and so forth - that is, important elements in the theoretical construct of neighbourhood effects; 2. Sorting effects: effects caused by the non-random selection of parents in the neighbourhood; and, most importantly, 3. The reflection problem: when a researcher observing the distribution of behaviour in a population tries to infer whether the average behaviour in some group influences the behaviour of the individuals that comprise the group (Manski 1993).

Sometimes studies of neighbourhood effects do not have access to longitudinal data. Sometimes contextual variables are measured the same year as the outcomes, which, of course, makes them more difficult to discuss in terms of cause and effect.

It is reasonable to assume that long-time or former neighbours have a greater influence than newer ones. Local networks can be very important for those who indeed

stay on a permanent basis (Ålund 1997), but they might not include those who stay in the area only for a short period of time. The flow of inhabitants “passing by” in less attractive housing areas prevents the development of stable social networks. This is sometimes dealt with by analysing long-time residents separately (e.g. Andersson 2004), but this results in a skewed selection, since there are fewer long-time residents in unattractive areas, and results will be difficult to interpret. The flow of new inhabitants may also be part of a social context that influences the outcome.

While using measures for neighbourhoods from 1991 instead of from the same year the outcome is measured, the individual selection of later neighbourhood is controlled for. This means that the impact of the area of upbringing is tested and not the effects of the current one. This is also more in accordance with the notion that social networks during one’s upbringing are more important than the neighbours of young, recently independent people. In theories of socialization, the environment during younger ages is of greater importance.

As in other studies, it is not possible to identify actual social relations or the quality of those relations, but it is reasonable to assume: 1) that families with teenagers have not moved recently (Fischer and Malmberg 2001, Jonsson 2001, Regionplane- och trafikkontoret 1997, Ungdomsstyrelsen 2003, Jans 2005); and 2) that some classmates live in the neighbourhood and that neighbours or classmates are still a considerably large part of children's networks (SCB 2003, Jonsson and Brolin Låftman 2001). Since the social networks of young people are more locally connected (SCB 2003) than the social networks of young adults that have recently left the nest, it could be expected that neighbours or inhabitants present in the same housing area before one has reached 18 years of age are important for the process of inclusion in the labour market during young adulthood (24-25 years of age). To place these assumptions on more secure footing,

individuals that did not live in the same parish in 1990 as in 1991 were excluded from the cohort. However, it is still not possible to control for parental choice of neighbourhood, which might mirror different methods of bringing up children or parental expectations and ambitions for their children. In part, measured “effects” of the neighbourhood will reflect this as well as other non-measurable aggregated characteristics on the family or individual levels.

Another empirical problem is that stigmatisation of the area results in an exogenous “address-effect” – that is, when employers classify applicants partly on the basis of where they have been raised or where they live. It is difficult to separate effects from “real” circumstances in the housing area from discrimination based on the image of the area. Effects of racial discrimination by employers will be controlled for through immigrant status on the individual level.

Analytically, the initial assumption is that data is nested in neighbourhoods and, consequently, is hierarchical on at least two levels: the individual level and the neighbourhood level. There are different statistical methods for dealing with the hierarchically clustered nature of the data. One frequently used method is to explicitly model the variability at each level within a hierarchical model, also known as a multilevel model or a random coefficients model (Bryk and Raudenbush 1992, Snijders and Bosker 1999). Multilevel models estimate within-neighbourhood and between-neighbourhood equations, accounting for potential dependence between observations within neighbourhoods. This model takes into account that the standard error, when using ordinary regression with clustered data, might be underestimated. The benefit of this approach – i.e. hierarchical modelling – is that it makes it possible to separate variance that can be explained on the neighbourhood level from variance on the individual level. It becomes possible to follow how the variance between

neighbourhoods is reduced when more variables controlling for different characteristics in the neighbourhood are included in the model. It also makes it possible to take into consideration how large a part of the total variance can be explained by the neighbourhood variables and how much can be explained by the individual variables. The ratio of the between-cluster variance in relation to the total variance (Variance Partition Coefficient VPC) is the percentage of the neighbourhood level variation in the total variation of the outcome. It measures how large a proportion of the total variance is explained by the neighbourhood level, or the correlation between units on the individual level within the neighbourhood level. Several researchers discuss the size of the VPC, which most often tends to be around 5-10 percent (Hox 2002, see discussion in Brännström 2006). But not all studies present it (or use the possibility to calculate it) and thus “forget” that the explained proportion of the total variance from one variable can be small even though the coefficient is large. Beta coefficients or log odds indicate the direction of the influence, but if the total influence from the variable in question is small, then the direction does not mean very much, however significant it may be.

The simplest version, used in this paper, is a model called the hierarchical model or random intercept model. It resembles ordinary least-squares regression but allows the intercept to vary with neighbourhood (Bryk and Raudenbush 1992, Snijders and Bosker 1999). The random effects model with no explanatory variables can be expressed as:

$$y_{ij} = \beta_0 + u_{0j} + e_{ij}$$

y_{ij} is the value for the outcome variable for individual i in neighbourhood j . β_0 is the common intercept, and the residuals is partitioned into individual level e_{ij} and neighbourhood level u_{0j} . In this model u_{0j} , the neighborhood effects, are assumed to be random variables coming from a normal distribution with variance σ^2_{u0} . β_0 is regarded

to be the overall population mean, and u_{0j} represent each neighborhoods difference from this mean. The variance between groups is σ^2_{u0} . This is called the empty model. Fixed effects on the individual level (X_{ij}) and on the neighbourhood level (X_j) are added sequentially in the model. Testing of additional random effects or interaction effects is outside of the scope of this article.

Since the outcomes in this study are dichotomous, a logistic least-squares regression model in which the results are shown as log odds is used. When the dependent variable is binary, the variance on the individual level becomes a function of its mean, which is dependent on the explanatory variables in the model. This makes it problematic to calculate VPC. Snijders and Bosker (1999, p. 224) shows that VPC can be approximated with the formula: $\sigma^2_{u0} / (\sigma^2_{u0} + 3,29)$.

In addition to the negative or positive effects, the estimates are progressively interpreted as follows: *Log odds* shows how much the log odds (e.g. the logarithm of the odds of having a low income in 1999) changes with one unit change in the explanatory variable, while holding the other variables constant.

The power of the models – how much they explain – is normally measured by a log likelihood value for the given models as compared to an empty model without explanatory variables. In the case of logistic least-squares that use quasi-likelihood methods, the log likelihood value becomes too uncertain to be able to be used as a likelihood ratio test. One way to compare different models is to see how much of the variance between neighbourhoods remains after including neighbourhood characteristics as control variables.

A multilevel study of neighbourhood-effects in Stockholm

The first challenge is to show that there really is a neighbourhood effect, in other words whether the chosen outcome in 1999 varies between neighbourhoods in 1991 and that this variation cannot be explained by individual variables, i.e. variation between individuals. This is plausible, given previous studies. The second challenge is to test two hypotheses. Can the variation between neighbourhoods, at least in part, be explained by a *socio-economic effect* and an '*immigrant*' effect? If so, what are the relative strengths of these two effects?

Data

The study benefits from access to a rich longitudinal register database containing information on the total population each year from 1990 to 2004.⁴ The variables used in the models are introduced in the following sections.

The cohort – individual level

The selected cohort includes all inhabitants in Stockholm county⁵ in 1991 that were born in the years 1974 or 1975 (38 179 individuals); individuals that moved from one parish to another between 1990 and 1991 (4 272 individuals) were excluded. This resulted in a dataset of a total of 33 907 individuals. Individuals with government subsidized loans and grants for studies corresponding to one semester (more than 31 900 SEK, 869 individuals) and/or with higher levels of education⁶ in 1999 than in 1998 (5 395 individuals) were also omitted from the analyses. Due to missing data for 4 082 individuals, a total of 23 561 individuals⁷ were included in the models when analyzing outcomes for 1999.⁸ Individuals not born in Sweden and with parents that live outside Sweden will have missing values on parents income and will consequently not be included in the analyze. The dataset used to analyze outcomes in 2004 was created in the

same manner, but excluding individuals with incomes from studies in 2004 and/or higher education in 2004 compared to 2003 instead, resulting in 25 450 individuals. Individual characteristics include: dummy variables for female, born in Sweden, mother born in Sweden, father born in Sweden, and logaritmed income from work in 1991 from mother and father, respectively. Level of education at the cohort individual level in 1999 was also tested but did not change the results and was not included in the models because of a higher proportion of missing values, especially with regard to foreign education.

The neighbourhoods – the contextual level

Inhabitant's residential areas were coded into so-called "SAMS areas" (Small Areas for Market Statistics). These geographical areas were constructed by Statistics Sweden in 1994 so as to contain socially homogeneous residential areas. Even though they are not always perfect approximations of housing areas as perceived socially, they are better than other administrative classifications, such as parishes. The variables describing the neighbourhoods – immigrant density and mean disposable income – were constructed with the means from measures for the total population of Stockholm county in the database, a total of 1 593 543 individuals in 1991. The selected members of the cohort were distributed among 761 SAMS areas in 1991.

In addition to having the intercept varying between SAMS areas, two different characteristics at the neighbourhood level were tested: immigrant density and mean income.

Immigrant density is the proportion of inhabitants born outside of Sweden measured in 1991 and divided into five categories with approximately 20 percent of the cohort in each. High immigrant density includes areas in which 18.8-65 percent are born

outside of Sweden, medium high = 12.6-18.7 percent, medium = 10.5-12.5 percent, medium low = 8.8-10.6 percent, and low = 0-8.7 percent.

Economic situation in the neighbourhoods is also measured in relation to five categories with approximately 20 percent of the cohort in each. The minimum and maximum of mean of disposable income in SEK/year for 1991 for each category are: low = 39 569 – 109 899, medium low = 109 790–118 528, medium = 118 569–128 212, medium high = 128 241 – 138 351, and high = 138 626–259 957.

The reason for dividing the values into categories is that previous tests as well as studies on similar material (Andersson 2001, Musterd and Andersson 2006, Musterd et al forthcoming) showed that the impact of immigrant density and medium level income is not linear. All of the models were also tested with immigrant density and disposable income both divided into ten equal groups and as continuous variables. This did not change the conclusions.

The outcome – individual level

It is difficult to find a completely accurate measure of being established in the labour market. For this study the variables “occupational status” from registration data from the National Employment Agency and “income from work” derived from the Swedish National Tax Board income registers were chosen as indicators. Outcome was measured from 1999, when the cohort was 24-25 years old, as log odds for: a) being registered as unemployed and seeking work through the National Employment Agency sometime in 1999; and b) having an income below 50% of the median income from work⁹ (less than 91 500 SEK/year). The most serious problem with these variables is that students with small or no government subsidized loan or grants, and who did not advance through the seven levels on education, and those not actively seeking work are also included among

the groups with low incomes.¹⁰ The same outcomes for 2004 were also analysed.

Results

A simple comparison between different neighbourhoods lends support to the image of contrasting local conditions of the city. The poorest areas are clustered in some well-known suburban areas northwest and south of Stockholm City. Areas with almost no foreign born inhabitants are mostly located in the peripheral archipelago of Stockholm county; the richest areas are located closer to the centre of Stockholm to the north and north-west and in the central business district of Stockholm City and are not extremely immigrant scarce. The rich and immigrant-scarce areas are smaller and comprised mostly of detached houses. There is no immigrant-dense area with medium high incomes, however areas with medium low incomes can be more or less immigrant dense. Areas with highest income are not the same areas as those with fewest immigrants.

The first impression conveyed by these data is that there is quite a large difference between different kinds of neighbourhoods (Table 1 and 2 in the Appendix). Almost one-fourth of those from areas with the lowest disposable incomes and in the most native-dense areas were registered as unemployed sometime in 1999. Only 12 percent of those from the wealthiest areas were registered as unemployed, however 47 percent from the same group had low incomes. This contradictory pattern did not recur when neighbourhoods was defined by proportion of immigrants. The percentage with low incomes from work as well as percentage unemployed was higher in the most immigrant-dense areas as compared to the most native-dense areas. This indicates that the major portion of those from the richest areas that do not work display, to some

degree, a voluntary no-work situation as compared to those from other kinds of areas. They should perhaps not be described as excluded from the labour market, since it is reasonable to believe that they are voluntarily not active in the national labour market, but can be working abroad or engaged in activities such as or studying abroad, travelling, or being financed by parents. This kind of voluntary unemployment may result in more beneficial prospects when later entering the labour market, as opposed e.g. work in a low paid positions.

The patterns in 1999 reveal that the relationship with being established in the labour market and the economic situation in the neighbourhood is not linear, which justifies retaining the definition of neighbourhood type as a categorical rather than a continuous variable. It also indicates that the impact of low incomes in neighbourhoods is similar to the impact of high immigrant density. This can easily be explained by the fact that they often represent the same places. However, areas with high incomes yield a different result as compared to areas with low immigrant density. The outcomes in 2004 was more linear, with lower percentage with low income in neighborhoods with high income as well as in neighborhoods with low proportions of immigrants.

As discussed in the preceding text, the variation between the means for neighbourhoods with low incomes, more individuals not working, and a greater proportion registered as unemployed in 1999 can be explained in different ways. *Sorting* is one important factor that has to be taken into consideration before conclusions about possible neighbourhood effects can be drawn. Thus, it is important to investigate how large a part of the variation between neighbourhoods is explained by its inhabitants having characteristics that on *the individual level* explain a higher risk of them winding up outside of the labour market.

The point of departure in the next part of the analyses involves the empty model

in which the intercept varies with the SAMS areas, described above, which will indicate the fraction of total variability in the outcome in 1999 that is due to the neighbourhood level in different years.

The VPC for the two different outcomes measured in 1999 for neighbourhoods in the years 1991 can be estimated as 4.45 percent for unemployed and 4.50 percent for low incomes. The rest of the variation is due to individual characteristics. This is perhaps a small proportion, but it is significant and important. VPC for outcomes in 2004 was 2.4 percent for unemployed and 3,8 for low income.

When including the share of inhabitants born in Sweden in the neighbourhood in 1991 in the empty model with a varying intercept for 1991 (Tables 3-4, Model 1, in the Appendix), the VPC was reduced. The log odds to be unemployed in 1999 is higher for individuals from “immigrant-dense areas” than for “native-dense areas”. On the contrary, the log odds to have a low income is negative both in high immigrant density and in low immigrant density neighbourhoods. This indicates that individual economic situations are not clearly associated with immigrant density in the area in which one has grown up, but involuntarily unemployment seems to be connected with immigrant density. The odds of being unemployed showed the greatest differences between different kinds of areas.

However, we still do not know if the effects of immigrant density merely reflects the fact that immigrants are discriminated in the labour market and that immigrant-dense areas also are poor. Is the observed relationship “only” an effect of the concentration of poverty? A third round of analyses is needed to answer this question.

Individual characteristics were included as fixed effects in the model in order to make the model more complete. This simple improvement of the model reduced some of the differences between the five groups of neighbourhoods in relation to immigrant

density (Tables 3-4, Model 2) in terms of log odds to be unemployed (Table 4). For low incomes the log odds for the two most immigrant-dense groups became even more negative.

The mean disposable income of the neighbourhood is included in the next model (Model 3). This further reduced the between-neighbourhood variance and the VPC.

The inclusion of income groups makes the effect of immigrant-dense groups smaller and less significant for log odds to be unemployed as well for low income. Low immigrant density seems to carry lower odds for both measures of labour market exclusion when mean income in the neighbourhood is taken into account. But that was also the case for high immigrant density, which makes the results difficult to interpret. Since some of the hypothesis propose effects mainly for immigrants, separate models including only persons born abroad and persons with both parents born abroad (N= 3504 in 503 sams areas for 1999 outcomes) was tested. The same pattern was revealed, but VPC was not significant (probably due to the small number). The lack of data on parents income in this group make further discussion on separate effects on this group problematic. Effects of immigrant density also disappeared with a classification into ten categories and when treated as a continuous variable (models not shown). It can be objected that concentrations of immigrants from certain countries would be more problematic than others. One group that is relatively less successful in terms of economic integration in Sweden is the group of individuals born in Turkey. Additional models were tested (not shown), in which immigrant density was exchanged for Turkish-born density. However, this rendered no change in the conclusions. Additional models were also tested with low income defined as 60 percent of the median income from work with the same results.

The difference between the VPCs in Models 3 and 4 reveals that the removal of immigrant density did not change the VPC very much. Log odds to be unemployed are higher in areas with a low mean income and lower in areas with a high income. Log odds for low income are the reverse. This supports the previous result indicating that young people in richer areas earn less money but are not actively seeking work. Young people in poorer areas are more often registered as unemployed but do not as often have low disposable incomes. Mean income has a larger explanatory value overall compared to immigrant density, which is evidenced by the lower VPC in Model 4 as compared to Model 3.

The conclusion is that the small effect on the risk to be unemployed and to have a low income in 1999 that can be attributed to the neighbourhood itself in 1991 is explained mostly by factors related to income and not by the proportion of inhabitants born abroad. The results regarding low income run contrary to the assumption of concentration effects: residents of the cohort from richer areas seem to be at higher risk of being outside the labour market (controlling for individual characteristics) at the age of 24-25. When it comes to actively seeking work, this is clearly more common in poor areas.

Obviously, there are two different concentration effects here. A check of parents' incomes contributes to an understanding of this result (Table 5). Individuals with low incomes in 1999 from the richest areas had parents with *higher* family incomes in 1991 as compared with the total cohort from the same quintile of areas (Table 1). This may indicate a lifestyle that makes it possible to have a low personal income when the parents (mainly the father) still contributes to expenses, regardless of whether the individual is a student or not. This kind of lifestyle among young people in this cohort appears to be more common in the richest areas. Analyses of outcomes in 2004 indicates

that this is a temporary period, since the log odds for people from richer areas to have low income is reduced. However, the log odds to have low income for people from areas with the highest incomes are still positive (0,11324, significant at 90% level) and log odds to have low income are negative for people from areas with the lowest incomes (-0,0558, not significant) in 2004. It is possible that the signs on log odds for low income might change in an even longer time period, when people from the richest areas have been more established in the labour market.

Overall, the results indicate that the neighbourhood in 1991 has limited additional effect, though some, on the risk of being unemployed or of having a low income from work for the members of the cohort in 1999. The most significant effect were the log odds of having low income being higher in rich areas when individual characteristics were controlled for. On the contrary, the log odds to be registered as unemployed (with or without compensation) were higher in the poorest areas.

Summary and concluding discussion

The study shows that it is necessary to take into account surrounding circumstances that affect social environment in the neighbourhood as well as to relate effects of one type of neighbourhood to effects of other types of neighbourhoods. A missing negative effect of concentrated poverty can be of great importance in relation to a large positive effect of concentrated wealth.

According to our tri-layered analysis, it thus appears that only a small portion of the variation appears to be a result of the characteristics of the neighbourhood. The statistical analyses demonstrate that odds for being unemployed or having low income for people from so-called deprived areas tend to be affected to some degree by local

socio-economic factors but not as much by the proportion of immigrants.

The results shed more light on the dramatic descriptions of the consequences and current states of the deprived suburban areas in Stockholm and in other cities around the Western world (e.g. Waldinger 1999, Sassen 1991, Massey and Denton 1993, Hamnet 2003). The issue of the racialised and divided post-modern city is perhaps not so geographical. The division is deeper and more complex. It is expressed in, among other ways, geographical concentration of social exclusion and different kind of lifestyles. It is not geographical proximity that is dangerous or contentious. However, the story does not end here. Ethnic housing segregation can still be an important part of how social distance between people is contained and reproduced. More prejudices between ethnic groups can also be expressed as increasing discrimination in the labour market.

It is nevertheless difficult to empirically verify the effects of housing segregation on integration in the labour market. It is not certain that a more dispersed housing pattern of an ethnic group results in a higher degree of integration in the labour market (Musterd 2003). Hence, the relationship between ethnic segregation in the housing market and ethnic segregation in the labour market is not causal but may consist of parallel processes that vary with different groups of immigrants.

Since the foreign born individuals in this study are more often concentrated in poor residential areas as compared to natives, they are more often negatively influenced by surrounding poverty, which in turn reinforces racial poverty and concentration of immigrants in poor areas. When new immigrants are “distributed” according to the same pattern of existing ethnic housing segregation, segregation is constantly reproduced and reinforced. Therefore, it is not possible to disregard either of these sides of the same coin.

My conclusion is that ethnic housing segregation and segregation in the labour market affect and reinforce one another through a concentration of foreign born individuals in poor areas. Housing segregation is not only a result of social inequality and forces of segregation; it also creates, to some extent, new segregation and inequality.

The content of the black box of neighbourhood effects is important in terms of policy implications. This study has shown that the local economic situation in areas in which individuals have grown up in Stockholm have an impact on becoming established in the labour market in the future. It is also clear that immigrants are more often victims of concentrated poverty. The conclusion is that the greatest efforts in area-based policy in Stockholm should be aimed at combating effects of socio-economic segregation. Since ethnic segregation is far from being explained on the basis of income data and, furthermore, has been exacerbated in the late 1990s (Urban 2006, 2007, Schierup and Urban 2007), further studies and policies focussed on discrimination in the housing market are needed. Among the many important questions that need to be asked are what impact the population in the schools has on future careers and what the relationship is between school effects and neighbourhood effects.

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² Ethnic capital is defined as the mean earnings of the ethnic group in the parents' generation (Borjas 1992).

³ An overview of previous research can be gained by looking at thematic issues of Housing studies 2002:1, 2003:6, Urban studies 2001:12 and 2006:43.

⁴ The dataset used in this study came from the LOUISE database, which is administered by Statistics Sweden (SCB). LOUISE is a longitudinal register database that contains information on personal and demographic variables, education, income, and employment status. LOUISE contains annual data (from 1990 onward) on individuals aged 16–64.

⁵ Stockholm County is regarded as one labour market region, which means that inhabitants in the region have reasonable commuting distances to a common labour market.

⁶ Level of income is measured as: 1. Elementary school less than 9 years; 2. Elementary school 9 years; 3. Post-elementary school (high school) up to 2 years; 4. Post-elementary school (high school) maximum 3 years; 5. Post-high school (university) less than 3 years; 6. Post-high school (university) 3 years or longer; and 7. Ph.D studies.

⁷ Missing values, especially parents income, was more common for individuals not born in Sweden and of parents not born in Sweden. Before the dataset was reduced by omitting individuals with missing values, 89,5% were born in Sweden; afterwards the figure was 93,2%. The median was measured on the total population in Stockholm, 16-65 years old, with income > 0.

⁸ 93.2 % (21 926) were born in Sweden, 1,1% (256) in Turkey, 1,0% (242) in Chile, 0.8% (185) in Finland, 0.6% (131) in Libanon, 0,4% (86) in Iran, 0,4% (83) in Germany, and the remainder 3,4% (804) in a number of other countries around the world.

⁹ Declared income from work, including declared income from trade, sickness benefits, and parental allowances.

¹⁰ One other possible choice of outcome that was tested but not reported in this article was received unemployment benefits, but since only people that had worked for six months could receive unemployment benefits in 1999, this did not capture people that had never been employed. Received social allowances was also considered, but there were technical problems with this since it was constructed on the basis of household income and household was constructed partly on the basis of geographical codes of buildings, so the neighbourhood effect was overestimated.

Appendix

Table 1. Characteristics in the cohort from neighbourhoods with different levels of mean disposable income.

<i>Neighbourhood group low high mean disposable income 1991</i>	<i>N</i>	<i>Mean mother disposable income 1991</i>	<i>Mean father disposable income 1991</i>	<i>Percentage unemployed 1999</i>	<i>Percentage low income from work 1999</i>
1 low	4387	125 000	129 000	23.5	37.7
2 medium low	4709	134 000	164 000	19.5	33.6
3 medium	4650	137 000	175 000	15.2	34.5
4 medium high	4982	141 000	196 000	13.4	37.4
5 high	4833	165 000	274 000	11.8	47.4
<i>Total</i>	<i>23561</i>	<i>140 000</i>	<i>189 000</i>	<i>16.5</i>	<i>38.2</i>

Table 2. Characteristics in the cohort from neighbourhoods with different levels of immigrant density.

<i>Neighbourhood group high low proportion of immigrants 1991</i>	<i>N</i>	<i>Mean mother disposable income 1991</i>	<i>Mean father disposable income 1991</i>	<i>Percentage unemployed</i>	<i>Percentage low income from work</i>
1 high	4 465	129 000	132 000	23.4	38.7
2 medium high	4 866	136 000	169 000	17.7	34.7
3 medium	4 286	152 000	205 000	16.1	40.4
4 medium low	5 848	143 000	224 000	13.0	40.2
5 low	4 096	142 000	208 000	13.1	36.6
<i>Total</i>	<i>23561</i>	<i>140 000</i>	<i>189 000</i>	<i>16.5</i>	<i>38.2</i>

Table 3. Log odds of being unemployed in 1999, intercept varying for neighbourhood 1991.

Cohort born 1974 and 1975, residing in Stockholm County 1991, 23 561 individuals in 761 SAMS areas. Standard error within parentheses. Estimated with RIGLS.

	1.	2.	3.	4.
<i>Fixed effects</i>				
Intercept, β_0	-1,66221*** (0,05028)	-1,11407*** (0,09139)	-1,16560*** (0,09756)	-1,23133*** (0,09039)
Control for Individual characteristics, $x\beta_{ij}$	No	Yes	Yes	Yes
Immigrant-density high	0,41965*** (0,07119)	0,18245** (0,07082)	-0,09816 (0,07977)	
Immigrant-density medium high	0,11794* (0,06839)	0,05749 (0,06637)	-0,08356 (0,06675)	
Immigrant-density medium	Reference group	Reference group	Reference group	
Immigrant-density medium low	-0,21498*** (0,06497)	-0,18010*** (0,06735)	-0,08458 (0,06757)	
Immigrant-density low	-0,22060*** (0,07309)	-0,16916** (0,07122)	-0,16328** (0,07045)	
Mean disposable income low			0,34450*** (0,07513)	0,31126*** (0,06502)
Mean disposable income medium low			0,27673*** (0,06608)	0,25503*** (0,06282)
Mean disposable income medium			Reference group	Reference group
Mean disposable income medium high			-0,07457 (0,06828)	-0,08631 (0,06573)
Mean disposable income high			-0,19327*** (0,07397)	-0,22615*** (0,06830)
<i>Neighbourhood random effect</i>	Yes	Yes	Yes	Yes
σ^2_{u0}	0,06995*** (0,01479)	0,05323*** (0,01347)	0,03514*** (0,01183)	0,03578*** (0,01187)
VPC ¹⁾	2,03154	1,54594	1,02056	1,03914

¹⁾Empty model: $\sigma^2_{u0}=0,15320***$ (0,02116), VPC=4,44934.

*=90% significant, **=95% significant, ***=99% significant (Walds test)

**Table 4. Log odds of having less than 50 percent of median income from work
1999 (<91 500 SEK), intercept varying for neighbourhood 1991.**

Cohort born 1974 and 1975, residing in Stockholm County 1991, 23 561 individuals in 761
SAMS areas. Standard error within parentheses. Estimated with RIGLS.

	1.	2.	3.	4.
<i>Fixed effects</i>				
Intercept, β_0	-0,39045*** (0,04795)	-0,23487*** (0,08259)	-0,38590*** (0,08702)	-0,49454*** (0,08010)
Control for individual characteristics, $x\beta_{ij}$	No	Yes	Yes	Yes
Immigrant-density high	-0,15200** (0,07396)	-0,40244*** (0,07566)	-0,18489** (0,07777)	
Immigrant-density medium high	-0,21865*** (0,06688)	-0,27932*** (0,06703)	-0,10963* (0,06253)	
Immigrant-density medium	Reference group	Reference group	Reference group	
Immigrant-density medium low	0,01282 (0,06638)	0,04409 (0,06635)	-0,16690*** (0,06100)	
Immigrant-density low	-0,18845*** (0,06717)	-0,14358** (0,06722)	-0,26096*** (0,06218)	
Mean disposable income low			-0,02826 (0,07221)	-0,09165 (0,06434)
Mean disposable income medium low			-0,05367 (0,06312)	-0,08452 (0,06132)
Mean disposable income medium			Reference group	Reference group
Mean disposable income medium high			0,24690*** (0,06208)	0,22117*** (0,06093)
Mean disposable income high			0,74052*** (0,06460)	0,67617*** (0,06045)
<i>Neighbourhood random effect</i>	Yes	Yes	Yes	Yes
$\hat{\sigma}_{u0}^2$	0,13384*** (0,01548)	0,13670*** (0,01576)	0,08078*** (0,01187)	0,08635*** (0,01230)
VPC ¹⁾	3,8933	3,97643	2,34979	2,51183

*Empty model: $\hat{\sigma}_{u0}^2 = 0,14773***$ (0,01642), VPC=4,49731

*=90% significant, **=95% significant, ***=99% significant (Walds test).

Table 5. Mean income 1991 of mother and father for individuals from the cohort with low income from work, not working and registered as unemployed 1999, in quintiles of neighbourhoods with highest and lowest medium disposable income.

	Mean of fathers disposable income 1991	Mean of mothers disposable income 1991
Low income/from poorest areas	114 863	117 430
Low income/from richest areas	312 808	210 352
No work/from poorest areas	121 386	122 163
No work/from richest areas	306 937	185 240
Reg.unempl./from poorest areas	117 682	121 923
Reg unempl./from richest areas	215 227	145 426