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Neighbourhood Ethnic Composition and Employment Effects on Immigrant Incomes

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Currently in many Western countries there are concerns that clustering of ethnic minorities in certain parts of cities will negatively affect integration processes. Scholarly theory and evidence on this point is mixed, however.

We use Swedish data and conduct a panel analysis quantifying the degree to which the ethnic composition of the neighbourhood affects the subsequent labour income of individuals for the 1991 to 2006 period. We employ a fixed effects model to reduce the potential bias arising from unmeasured individual characteristics leading to neighbourhood selection. We also control for a range of individual demographic and socio-economic attributes. Based on gender-stratified analyses of eight immigrant categories (N= 110,000) in three Swedish metropolitan areas, we find that male immigrants (females less so) gain if they reside in neighbourhoods with higher shares of co-ethnics and (under most circumstances) other immigrants, though the impact depends on neighbourhood level of employment and trajectory of ethnic share. This, we argue, should not be seen as an argument for ethnic residential segregation but it tells us that the high degree of exclusion from the labour market experienced by many immigrants in Sweden is not directly caused by the level of immigrant residential segregation.

Keywords: neighbourhood effects, ethnic clustering, fixed effects models, gender differences, Sweden

Introduction

In its broadest terms, this paper is concerned with the relationship between ethnic segregation and social integration. This topic has attracted a great deal of recent scholarly interest, particularly visible in this journal, in the wake of increasing political worries concerning exclusion and marginalisation of many immigrants in most of Western Europe (see *JEMS*

2010, vol. 36, No. 2). Questions like “Do ethnic minorities gain or lose by seeking spatial assimilation?” or “Do they fare better living clustered among co-ethnics?” have taken centre stage. We aim at contributing to this debate.

These general research questions are relevant in most countries experiencing significant amounts of immigration. Sweden is no exception. Currently, one in seven (15.1 per cent) of Sweden’s population is foreign-born. This immigration has been associated with two worrisome trends. Labour market participation of immigrants decreased decade by decade from the 1950s to the 1990s and has since remained far below the level experienced by native Swedes. Immigrant residential segregation has risen and many housing estates now comprise almost entirely residents originating from abroad. It is therefore not surprising that both social science researchers and politicians often believe there is a causal link between these developments.

At a group level, empirical accounts indeed show a strong correlation between residential segregation and different measures of social integration. Swedish immigrant categories showing higher levels of residential segregation also display lower levels of employment (Andersson, Bråmås and Hogdal, 2009). There is also a strong correlation between mean work income in neighbourhoods and the presence of immigrants in neighbourhoods (Andersson, Bråmås, and Holmqvist, 2010.). These stylized facts are sufficient to justify more systematic research into the issue, though not sufficient evidence of causality. Our research aims at expanding our knowledge concerning the degree to which residential segregation affects labour market outcomes for individual immigrants through a model that offers plausible evidence of a causal relationship.

The paper also contributes to current debates about the size of neighbourhood effects. Most of the quantitative neighbourhood effects literature is concerned with consequences of living in poor neighbourhoods; there have been only a few European contributions focusing on the ethnic dimension, e.g. Musterd et al (2008). This might be problematic insofar as concepts and research outcomes may be taken out of context, inappropriately generalized, and uncritically transferred to different societal situations involving immigrants, see Peach (2010).

Notwithstanding limited evidence, many European countries (such as Sweden, the basis for this paper) have diagnosed ethnic residential concentration as a problem (Phillips 2010). Ethnic residential segregation,

Neighborhood Composition Effects on Immigrant Incomes

official Swedish documents argue (Andersson 1999), is the result (not a cause) of the labour market exclusion experienced by many recently arrived cohorts of refugees. Urban area-based interventions are thus targeted towards immigrant-dense neighbourhoods (Andersson 2006) and attempts made to disperse refugees (Andersson, Bråmås & Holmqvist 2010).

It is in this context that our paper begins by engaging with existing theories and generating some alternative hypotheses concerning effects of ethnic spatial concentration for minority members' labour market success. We also explore theoretically why effects may differ according to gender. In the subsequent section we describe data and variables, and present our fixed effects model, which involves different specifications aligned with various assumptions about the nature and timing of the underlying causal processes. We then present our empirical results, distinguished by gender. We close with a discussion of the results and what they imply for theories of ethnic residential segregation and effects thereof, and public policies related to neighbourhoods with high immigrant concentrations.

Our paper advances the scholarly literature and contributes to the current policy debates in three ways. First, we measure neighbourhood context in a richly textured fashion. Not only do we measure the immigrants' current neighbourhood composition of own-ethnic group and all foreign-born residents, we measure these compositions three years prior and trajectories of change in these compositions. Most importantly, we measure the employment rate of working-age adults in the neighbourhood, which proves to contextualise results in important ways. Second, we obtain parameter estimates from a fixed effects model estimated over a panel of 110,000 metropolitan Sweden immigrants observed annually over a 15-year period. This model allows us to make plausible claims regarding causal effects of neighbourhood context on the outcome of interest: labour income. Third, we demonstrate that not only current exposure to own-ethnic neighbours matters but whether this exposure has been increasing or decreasing over time matters as well.

Theorising causes and effects of ethnic residential concentration

A specific ethnic residential pattern could have many different causes. First, it could have some sort of "ethnic" explanation and be voluntary in

nature, i.e., produced by clustering based on group identification processes and/or perceived economic advantages. Second, it could be ethnically based but involuntary in nature, i.e., produced by steering/discrimination in housing allocation or market processes and/or the majority's flight and avoidance behaviour. Third, it could be the result of non-ethnic residential sorting processes, i.e., demographic and social class characteristics being different for different ethnic groups leading to different residential outcomes (Andersson, 2012; Finney & Simpson, 2008).

If one believes that the residential pattern of a specific ethnic minority group is *voluntary* and based on preferences held by members of this group, it is natural to expect this pattern to be rational, i.e. to try to understand which benefits they may gain by this residential behaviour. The literature offers a set of reasons for why members of a minority group would seek geographical proximity: for *defence*, for mutual *support*, for the opportunity to reproduce *cultural behaviour*, and for *struggle* (Boal, 1976; Knox & Pinch, 2006). Others, such as Cutler and Glaeser (1997) and Borjas (1992, 1995, 1998), have rather emphasised that members of ethnic minority groups could benefit economically by capitalising on ethnic human capital, for instance, access to networks that provide resources for social mobility (see for instance Waldinger & Lichter, 2003). Such models, stressing the importance of human capital externalities, often argue that ethnic concentrations ('enclaves') pay economic dividends to its members, especially if there is a valuable stock of human capital within them (as measured by educational level, language competence, employment levels, etc.)

The vast body of research contributing to our understanding of ethnic residential patterns also contains approaches focusing on the actions of majority/host institutions and populations that lead to *involuntary* segregation of minorities (for interesting work on Sweden, see Pred (2000) and Bråmås (2006)). Nation states and local states may try to affect the residential pattern of minorities by enforcing different types of constraints on their settlement choices (refugee dispersal programmes are but one type of example, see Robinson, Andersson & Musterd (2003)). The majority population could react to the immigration of a minority ethnic group into their neighbourhood by *accepting* members of the minority or it could be *reluctant* to accept such residents. In the latter case, this typically triggers *flight* reactions (whereby members of the majority leave neighbourhoods that have experienced in-migration of minority

Neighborhood Composition Effects on Immigrant Incomes

households), *avoidance* behaviours (whereby they refrain from moving into such neighbourhoods), and *blocking* strategies (whereby action is taken to keep the minority out of majority-dense neighbourhoods, “isolated host communities” as they are labelled by Johnston, Forrest and Poulsen (2002); see also Peach (2009)).

It seems reasonable to surmise that if the residential pattern of minorities is the result of discriminatory or avoidance behaviour among host country institutions and residents, members of a minority group will lose from this situation. In particular, under these circumstances minorities may be confined in neighbourhoods that have the fewest amenities (such as access to employment, high-quality public services and education, clean environments), the greatest potential for place-based stigmatisation of residents, and fewer networks linking them to the mainstream economy. In this last regard, studies from several European countries have shown how immigrants residing in higher ethnic concentrations have fewer social contacts with the majority population (Blasius and Friedrichs, 2007; van der Laan Bouma-Doff, 2007; Vervoort 2011).

Thus, though the literature on clustering is extensive, it is deeply divided in its implications regarding the economic consequences of immigrant segregation. Moreover, most prior contributions focus on one particular ethnic group and its relationship with a charter group. We argue that co-ethnic clustering should be seen in relation not only to the majority population but also to other categories of immigrants. Hence, we will attempt to clarify the debate by modelling the impact of the presence of co-ethnics in relation to other foreign-born and to the majority population. We will also take time into account by measuring the potential existence of lagged effects of different neighbourhood compositions.

Specifically, we will address three distinct research questions, each of which is framed in terms of comparing labour incomes for two identical immigrants living in two identical neighbourhoods except that they differ on the margin in their ethnic composition. We investigate whether an immigrant’s income from work is affected positively or negatively if:

1. a member of their own ethnic group replaces a neighbouring native Swede?
2. a member of a different ethnic group replaces a neighbouring

native Swede?

3. a member of their own ethnic group replaces a neighbouring immigrant from a different group?

We argue that all three questions are highly relevant in the emerging multi-cultural Western societies: is immigrant clustering and especially clustering of co-ethnics economically beneficial or not for these immigrants?¹

Contextualising immigration to Sweden and Swedish residential patterns

Sweden has been a net immigrant receiving country since the 1930s and has been at the top of the European list in terms of immigration entrances per capita for several decades. Sweden experienced war-related refugee immigration during and after WW II, and a substantial influx of labour migrants in the 1950s and 1960s. Since the early 1970s, labour migration has been restricted (except in the Nordic region and later within the EU) but during the same period Sweden has allowed nearly one million refugees and their relatives to settle permanently. The share of foreign-born—15 per cent in 2012—now exceeds the U.S. figure. As elsewhere, most immigrants are found in metropolitan regions (especially in Stockholm, Gothenburg, and Malmö).

Immigrant co-ethnic clustering is generally low, with the median share of own ethnic group in the neighbourhood below 5 per cent for most groups. Musterd and Andersson (2005), using country-wide data on Sweden, show that most residential areas are rather mixed ethnically. Median share of foreign-born in immigrants' neighbourhoods is around 31 per cent in metropolitan regions. Many recent arrivals, however, live in immigrant-dense neighbourhoods on the urban periphery that evince a variety of worrisome socioeconomic indicators. For more on the history of Swedish policies regarding immigrant settlement patterns, see Andersson

¹ The reader might hope for an analysis where more focus is on comparing different categories of migrants. We have indeed conducted such a study before (see Musterd, Andersson, Galster and Kauppinen (2008); no significant differences found across eight groups) but decided not to repeat this. And, equally important, the debate on the potentially detrimental integration effects of ethnic clustering is a very generalised debate (good/bad) and we would consequently like to arrive at a more general conclusion. This is also why we do not stratify by metropolitan region.

Neighborhood Composition Effects on Immigrant Incomes

(1999), Andersson, Bråmås & Holmqvist (2010) and Holmqvist (2009).

A neglected element: Gender differences

Earlier contributions to the ethnic segregation debate have paid little if any attention to gender differences in causal mechanisms or outcomes. Those who emphasise gender differences mostly focus on immigrant cultural practices, for instance stressing differences in family systems and the subordinate role of women and their consequences for female education and labour market participation (South 2001). As far as we have been able to ascertain, there has been no theorising about whether ethnic segregation might mean different things for women and men in terms of their prospects for labour market success. We therefore draw upon prior scholarly work on the mechanisms of neighbourhood effects to see if such a theoretical case can be made.

Neighbourhood effects may transpire through a variety of causal mechanisms that can occur either through social interactions within the neighbourhood and/or by actions of others located outside of the neighbourhood; for extended discussion, see especially Dietz (2002), Friedrichs (1998), Galster (2012), Gephart (1997), Jencks and Mayer (1990), Sampson (2001), Sampson, Morenoff and Gannon-Rowley (2002). We believe that the interaction of two of these mechanisms—socialisation/social control and networks—provide inferences about gender differentials in the impact of ethnic concentration (see also Galster, Andersson and Musterd 2010).

Socialisation and social control forces emanating from within immigrant communities may generate gendered effects both on permissible behaviours and the spaces in which permissible activities may be conducted. For example, in immigrant-dense areas where more traditional, patriarchal norms regarding women (especially if they have young children) and work prevail, women are likely to manifest fewer economic successes in the external labour market than men. In other communities, the norms against female employment may be more tolerant and encouraging, but may nevertheless limit women's ability and willingness to look for employment opportunities outside the neighbourhood (Pinkster (2008)). The forgoing implies that immigrant women in ethnic concentrations may gain less information about skill-enhancing and employment opportunities because neighbourhood

socialisation and social control processes lead them to depend more on localised social networks. Indeed, van der Laan Bouma-Doff (2007) found that segregation of minorities reduced their social contacts with indigenous Dutch and that these contacts were even fewer for immigrant women. Because immigrant Swedish women are less likely on average to participate in the labour force, inter-immigrant female local social networks are likely to impart less information about employment opportunities, even when compared to immigrant males. Consistent with the notion of more limited and less robust "weak tie" networks, Pinkster (2008) observed that poorly educated women in an immigrant-dense Dutch neighbourhood were forced to resort to more formal job search patterns, while poorly educated men more often relied on informal networks, yielding distinctive economic outcomes (see also Marsden & Gorman (2001:476), Moore (2000) and Smith (2000)).

In concert, it is primarily considerations related to socialisation/social control and networks mentioned above that lead us to hypothesise that immigrant women will more likely face economic penalties relative to immigrant men by residing in concentrations of their own ethnic group. In this paper we explore whether this conclusion holds for Swedish immigrants by stratifying all our models by gender.

Data and model

The variables we employ are constructed from data contained in the Statistics Sweden *Louise/Lisa* files, which are produced annually. These files contain a large amount of information on all individuals age 15 and above and represent compilations of data assembled from a range of statistical registers (income, education, labour market, and population). We have merged selected information about individuals from annual *Louise* files to create a unique, longitudinal database 1991-2006 for *all adults* residing in 1991 in three of Sweden's large metropolitan areas, Stockholm, Gothenburg and Malmö. Since we focus on labour earnings, we confine our analysis to prime working-age individuals (ages 20-49 in 1991; 35-64 in 2006). Since we also wish to maintain a reasonably consistent notion of urban neighbourhood (see below), we further confine our analysis to those who were residents of (any of) these three metropolitan areas in each year from 1991 to 2006. People are allowed to move within and between the metropolitan areas but we exclude individuals that for any given year reside in neighbourhoods having very

Neighborhood Composition Effects on Immigrant Incomes

low population density (less than 10 residents). This population amounts to about 1,06 million people; 190,000 of them have foreign background, defined as either born abroad or born in Sweden having two foreign-born parents. Background region is defined by either country of birth or mother's country of birth (if non-Sweden-born parents originate in different countries). We then select individuals with background in any of the following eight countries: Finland, Former Yugoslavia, Poland, Lebanon, Turkey, Iraq, Iran or Chile. These countries were all among the top 11 in terms of population numbers in Sweden in 1991; Norway, Denmark and Germany (also being top 11) have been excluded from the selection. In total, the database set up for conducting the analyses comprises about 110,000 individuals. Characteristics of our population are provided in Table 1.

Table 1. Descriptives for control variables per country of birth.

Variable	Finl.	Yugo.	Poland	Leban.	Turkey	Iraq	Iran	Chile	Total
Number (N)	53842	11497	12206	3331	9630	3432	10699	7602	112239
Age (1994)	37	36	39	33	34	36	36	36	37
Children, years < 7	0.90	0.96	0.65	2.48	1.70	1.88	1.01	1.02	1.04
Pre-retirement*	0.09	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.18
Parental leave*	0.23	0.17	0.16	0.22	0.20	0.22	0.18	0.25	0.21
Sick*	0.17	0.21	0.20	0.18	0.21	0.19	0.18	0.20	0.18
Studying*	0.04	0.04	0.05	0.08	0.07	0.08	0.12	0.09	0.06
Schooling*									
<12 yrs	0.61	0.66	0.38	0.76	0.80	0.48	0.30	0.63	0.58
12 yrs	0.13	0.18	0.20	0.10	0.07	0.15	0.26	0.17	0.15
13-14	0.13	0.10	0.16	0.07	0.06	0.15	0.21	0.11	0.13
>15	0.12	0.06	0.24	0.06	0.05	0.21	0.21	0.08	0.13
Household change*									
<i>Couple to single</i>	0.02	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02
<i>Single to Couple</i>	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02
Ethnic context in neighborhood									
% Foreign background	24.1%	33.5%	26.6%	51.2%	52.2%	46.4%	33.0%	39.0%	31.1%
% Own Group	6.1%	4.7%	1.9%	4.2%	9.0%	4.7%	3.9%	2.4%	5.2%

*Yes = 1

Our Model of the Determinants of Individual Labour Incomes

We model in conventional, log-linear form the annual income from work during year t (with the current year $t=0$) for individual i residing in neighbourhood j in local labour market area k as:

$$\ln(I_{itj}) = \alpha + \beta[P_{it}] + \gamma[P_i] + \vartheta[UP_i] + \theta[N_{tj}] + \varepsilon_{it} \quad [1]$$

where:

I_{it} = annual income from work observed for individual i in year t (all individuals are included and those having 0 income have been given the value 1 SEK)²

$[P_{it}]$ = observed personal characteristics in year t for individual i that can vary over time (e.g., marital or fertility status, educational attainment)

$[P_i]$ = observed personal characteristics for individual i that do not vary over time (e.g., gender and country of birth)

$[UP_i]$ = unobserved personal characteristics for individual i that do not vary over time after start of analysis period that may affect income (e.g., childhood experiences, certain beliefs and work habits)

$[N_{tj}]$ = observed ethnic and economic characteristics of neighbourhood(s) j where individual resides during year t and three years prior (e.g., shares of neighbours with same ethnic origin)

ε_{it} = a random error term with statistical properties discussed below

In this study we operationalise “neighbourhood” as the area delineated by a “SAMS” defined by Statistics Sweden. The SAMS classification scheme is designed to identify relatively homogeneous areas by taking into account housing type, tenure and construction period. They

² Formally, income from work (förvärvsersättning) is computed here as the sum of: cash salary payments, income from active businesses, and tax-based benefits that employees accrue as terms of their employment (sick or parental leave, work-related injury or illness compensation, daily payments for temporary military service, or giving assistance to a handicapped relative).

Neighborhood Composition Effects on Immigrant Incomes

vary somewhat in terms of population, even within metropolitan areas. On average, a SAMS in Malmö and Gothenburg is roughly half of that in Stockholm (408, 357 and 844 residents respectively). We focus on the share of co-ethnics in the neighbourhood as the primary [N] of interest. On average, an immigrant in our sample lived in a neighbourhood having 5.2 per cent population of the same ethnic group; see Table 2 for information concerning the variation in own-group exposure per ethnic category.

Table 2. Percentile Distribution for percentage own ethnic group in metropolitan neighbourhoods, by country of birth.*

Percentile	Form.								All	All
	Finland	Yugo.	Poland	Leban.	Turkey	Iraq	Iran	Chile	Males	Females
10	2.3	.5	.5	.2	.6	.4	.6	.3	.7	.8
20	3.2	.8	.7	.6	1.4	.8	1.0	.6	1.3	1.4
30	3.8	1.3	.9	1.0	2.9	1.4	1.4	.9	2.1	2.2
40	4.4	1.9	1.1	1.5	4.7	2.0	1.9	1.3	3.0	3.1
50	5.1	2.7	1.3	2.4	6.4	2.9	2.5	1.8	3.9	3.8
60	6.1	3.9	1.6	3.0	9.5	4.1	3.4	2.4	4.8	4.7
70	7.4	5.4	2.1	4.3	12.6	5.9	4.6	3.0	6.2	5.8
80	9.3	7.4	2.7	5.9	15.9	7.8	6.4	4.0	8.4	7.7
90	11.7	10.9	4.0	10.5	21.4	11.2	9.7	5.2	11.7	11.0
100	50.0	46.7	50.0	100.0	62.5	59.0	100.0	66.7	100.0	100.0

*The table should be read in the following way: For people born in Finland, only 10 percent live in neighbourhoods having 11.7 percentage or more Finnish-born residents (Percentile 90). Half of all Finns live in neighbourhoods have 5.1 or less percentage co-ethnics (Percentile 50).

We also measure total foreign-born share in the neighbourhood, as another dimension of ethnic context that will affect a given immigrant's exposure to native Swedes. On average, an immigrant in our sample lived in a neighbourhood having 31.1 per cent population of immigrants from all ethnic groups. Finally, many scholars have stressed that the importance of ethnic context differs depending on -for instance- the amount of human capital in neighbourhoods and in ethnic clusters (Borjas (1995), De Graaff and de Groot (2004), Edin et al (2003)). We therefore add share of working age adults who are employed as a measure of the economic context of the neighbourhood, and will experiment modelling interactions between the ethnic and economic context variables. In the database we

have constructed we observe these neighbourhood conditions annually from 1991 to 2006 and compute the above [N] variables based on the entire population, not just our immigrant analysis sample. We aim at estimating the effects of the neighbourhood context and that can change either by an individuals' change of neighbourhood or by in situ change in neighbourhood composition. Whether these two types of contextual change lead to different outcomes is an interesting question but it will not be addressed in this paper.

As for the control variables in our models, we operationalise the observed personal characteristics of individuals $[P_t]$ and $[P]$ with a set of variables describing their demographic and household characteristics, educational attainments, and features of their employment status during the period (measured annually in the first week of November) that will affect their income (such as parental leave, illness, or studying)³. These variables and their descriptive statistics are presented in Table 1.

We cannot, of course, directly measure [UP]. Indeed, the well-known problem of geographic selection bias occurs when this variable is not statistically controlled and proves highly correlated with the [N] variables, producing thereby a violation of the standard independence assumptions for ε_{it} (Dietz (2002), Galster (2008)). However, the panel nature of our data provides a vehicle for overcoming part of this problem with a proxy for time-invariant unobservables: fixed-effect models (see, e.g. Weinberg, Reagan, and Yankow (2004)). The fixed-effects model assumes that each individual has a particular intercept differing from the mean by some constant value, i.e. α_i , which we would argue serves as a proxy for the [UP] terms. Thus, [1] can be rewritten as a fixed-effects model:

$$\ln(I_{tij}) = \alpha_i + \beta[P_{ti}] + \gamma[P_i] + \theta[N_{tij}] + \varepsilon_{it} \quad [2]$$

We have no reason to believe that effects of ethnic clustering (living among co-ethnics) should vary between the three regions encompassing our sample. Residential patterns as well as the level of ethnic segregation and ethnic clustering do not differ much between Stockholm, Gothenburg

³ To the extent that these may also be affected by neighbourhood context in the same way as labour income, our model "over-controls" and underestimates the full neighbourhood effect.

Neighborhood Composition Effects on Immigrant Incomes

and Malmö. Hence, we run all models for all neighbourhoods aggregated across all three metropolitan areas.

We conduct our empirical analysis in four steps. First, we calculate for all eight groups jointly –but separately for males and females– the effect of residing in neighbourhoods having a varying degree of co-ethnics (defined as being born in the same country or having two foreign-born parents born in that country⁴) controlling for individual and household characteristics and also for the overall presence of immigrants in the neighbourhoods. We also control for lagged effects by adding information concerning the presence of co-ethnics, and immigrants in general, in neighbourhood three years prior. In the second model we also control for persistence and trajectory concerning our key neighbourhood variable. We differentiate between individuals experiencing an “upward”, “downward”, and “stable” exposure to co-ethnics over a three-year period (t and t-3). We hypothesise that changes in our key contextual variable over time might potentially be as important as the contemporary absolute value of co-ethnic concentration. Changes will probably affect the minority residents as such (for instance, creating denser or less dense social networks) but it could also affect stigmatisation processes, i.e. other residents’ and non-residents’ opinions about a particular neighbourhood. A more general hypothesis is that if the presence of co-ethnics has an effect, increasing co-ethnic density over time would reinforce such an effect.

We have calculated this trajectory variable for each individual and for all years covered in the analysis. The 1994 value is based on a comparison with the 1991 value, the 1995 value on a comparison with 1992, etc. Those residing in neighbourhoods experiencing increasing proportions of co-ethnics by more than 5 percentage points are categorised as being in an upward trajectory. A stable trajectory is reserved for those with a non-changing share of people of the same origin

⁴ Using country of birth information for identifying ethnic categories is sometimes problematic (immigrants from a particular country could indeed have different ethnicity) but there is no alternative option available to us in the Swedish context. While some countries –such as the U.S., the U.K., Australia and Canada, use self-reported census data, Sweden and other Scandinavian countries do not carry out censuses anymore. The latter countries have on the other hand high quality, often weekly updated address registers on the entire population. These registers contain information on country of birth and citizenship as well as linkages between generations (country of birth and citizenship of mother and father).

(change no more than plus or minus 5 percentage points). Remaining individuals (downward trajectory) comprise the reference category. Table 3 shows the overall distribution of observations (110,000 individuals \times 13 years) across these three trajectories; there are sizeable shares in each, with the plurality (42 per cent of males and 43 per cent of females) having a decreasing trajectory. We also interact the percentage own ethnic group with the trajectory variable. It should be stressed that an individual's specific annual trajectory value, for example being identified as being in upward trajectory, could come about either because of migration or because of *in situ* neighbourhood change.

Table 3. Percentage of the immigrant population experiencing upward, downward and stable trajectories (t-3 to t0) in terms of percentage own ethnic group in neighborhood.

Trajectory over 3 years (proportion own group)	Variable name	Percentage of all observations	
		Males	Females
Increasing	Uptrajown (Upward trajectory, own ethnic group)	34.6	31.0
Stable	Stabtrajown (Stable trajectory, own ethnic group)	23.1	26.0
Decreasing	<i>Not used in models (ref)</i>	42.3	43.0
Total		100.0	100.0

In the third model we add current and lagged (t -3) employment level in neighbourhoods as control variables. And, in order to better understand the combined effects of the ethnic and employment composition, we expand further the fourth model with a series of interactions among our [N] variables.

Results

We estimated parameters of our various fixed effects models [2] using the Generalised Least Squares (GLS) algorithm in STATA IC-11. Our models explained 31%-36% of the variance in individual labour incomes over the 15-year period, with the vast majority of estimated coefficients proving highly statistically significant.

Results for the control variables, distinguished by gender, are

Neighborhood Composition Effects on Immigrant Incomes

presented in Tables A1a and b (See Appendix A). The control variables of time-varying personal characteristics perform very much as expected. Incomes are greater for those who: have better educational credentials, are not currently studying, or taking advantage of the generous Swedish benefits for sick leave or parental leave⁵. Those who are on pre-retirement schemes or who have an increase in the number of children under age 7 see lower incomes. Being single improves income prospects for males but is negative for females. For those who recently changed their civil union status, effects are negative for females but positive for males becoming singles. Males changing from single to couple status are negatively affected. The variable “Year” is positive for both genders, indicating improving income prospects over time for these cohorts of immigrants. All the subsequent results regarding neighbourhood ethnic and employment level variables should be interpreted in the context of models containing these control variables, though for brevity these are not reported in all tables.

Of more relevance to our enquiry are the results for the neighbourhood ethnic composition variables. We report these below, following the sequence of models presented above. In overview, the apparent economic impact of neighbourhood ethnic composition is sensitive to which control variables are employed and these sensitivities differ by gender.

Model 1 to 3: contemporary and lagged effects of the share of co-ethnics and all immigrants with and without controlling for neighbourhood co-ethnic trajectory and employment

Model 1 results, which do not control for either the temporal trajectory of the individual’s neighbourhood co-ethnic share or neighbourhood employment rates, indicate that males benefit economically from a higher current and lagged neighbourhood share of co-ethnics, holding the share of foreign-born constant. The coefficient of the current co-ethnic share for females is not significant but the lagged variable (exposure to co-ethnics

⁵ It should be noted that being sick does of course reduce an individual’s income compared to if the person would be working full-time. The reason for the positive correlation between the dummy “having been on sick leave during a particular year” and income from work is probably that one qualifies for sick leave benefits only by working. People having a stronger position on the labour market are thus better covered by this insurance and earn more than those who, e.g., are not employed.

three years prior) also indicates positive effects for females. By contrast, for both genders exposure to higher shares of other immigrants apparently conveys negative economic consequences.

Model 2 output shows that current and lagged values for co-ethnic shares no longer have statistically significant positive coefficients for males when the trajectory of this share is controlled, but they become so for females. Results also suggest that females (but not males) who experience over the prior three years a growing share of own-group neighbours do worse than those with a declining share, controlling for percentage foreign-born. As before for both genders, higher current shares of other immigrants maintain their significant negative effect.

Entering employment rate and its lagged version in Model 3 does little to change the coefficients of the ethnic share or trajectory variables (though current co-ethnic share for females is now insignificant. Two more important results occur, however. First, neighbourhood employment share indeed has independent positive effects on the income of individuals, independent of ethnic mix. A ten per cent increase in neighbourhood employment increases income around 24 per cent for both male and female immigrants. The lagged effects of employment rates are also statistically significant but much smaller. Second, controlling for neighbourhood employment rate alters the sign of the current share of foreign-born residents' variable from negative to positive. This suggests that it is the residence of many immigrants in low-employment neighbourhoods, not simply immigrant concentration, that adversely affects their income prospects. Indeed, this model indicates that, controlling for neighbourhood employment rates, higher neighbourhood shares of foreign born (or, equivalently, higher absolute numbers of co-ethnic residents) and higher lagged shares of co-ethnics produce positive income effects for immigrants of both genders, though slightly more strongly for males.

Model 4: Contemporary and lagged effects of the share of co-ethnics and all immigrants when interacting neighbourhood co-ethnic share, trajectory and employment variables

Adding the set of employment interaction variables to the former model yields a much stronger model and produces several dramatic changes in results; see Table 4d. First, these interaction terms with current shares of both co-ethnic and total immigrants prove statistically significant, as do

Neighborhood Composition Effects on Immigrant Incomes

many employment rate interactions with trajectory variables. This strongly supports our earlier claim that the economic consequences of ethnic concentrations should differ according to local employment context. Second, the point estimates for current (though not lagged) shares of both own-group and all immigrants turn statistically significant for both males and females. Thus, the fourth model yields independent “main effects” of current ethnic composition and employment rates and an interaction effect as well.

Table 4a. Point estimates for Model 1

Control	Males		Females	
	Coeff.	Sign.	Coeff.	Sign.
No of children years >7	-0.0210950	***	-0.0889530	***
Family type, single=1	0.1192583	***	-0.1507552	***
Pre-retired, yes=1	-2.7995060	***	-2.7300300	***
Parental leave, yes =1	0.6123819	***	0.4629521	***
Sick, yes=1	0.1942042	***	0.3640471	***
Studying, yes=1	-1.5238980	***	-1.3647880	***
Educ 10-11 years, yes=1	0.2423807	***	0.2787325	***
Educ 12-14 years, yes=1	0.4489119	***	0.3072184	***
Educ 15+, yes=1	0.9245185	***	1.0059830	***
Couple to single, yes=1	0.0608128	***	-0.0829666	***
Single to couple, yes=1	-0.0372516	***	0.0110485	ns
% Foreign background	-0.0050885	***	-0.0059964	***
% Own ethnic background	0.0062475	***	0.0024971	ns
Year	0.0672145	***	0.0596721	***
% Own group, lagged 3 yrs	0.0084143	***	0.0132949	***
% Foreign, lagged 3 yrs	0.0005790	ns	-0.0005349	ns
Constant	-128.7534000	***	-113.4302000	***
R sq	0.29		0.34	

*** Significant at .01

Table 4b. Point estimates for Model 2: with trajectory

Control	Males		Females	
	Coeff.	Sign.	Coeff.	Sign.
No of children years >7	-0.0210126	***	-0.0887484	***
Family type, single=1	0.1180976	***	-0.1526076	***
Pre-retired, yes=1	-2.8030700	***	-2.7327130	***
Parental leave, yes =1	0.6118353	***	0.6118353	***
Sick, yes=1	0.1938518	***	0.1938518	***
Studying, yes=1	-1.5241020	***	-1.5241020	***
Educ 10-11 years, yes=1	0.2429832	***	0.2429832	***
Educ 12-14 years, yes=1	0.4492484	***	0.4492484	***
Educ 15+, yes=1	0.9264479	***	0.9264479	***
Couple to single, yes=1	0.0631038	***	0.0631038	***
Single to couple, yes=1	-0.0339841	***	-0.0339841	ns
% Foreign background	-0.0040827	***	-0.0040827	***
% Own ethnic background	0.0026652	ns	0.0026652	***
Year	0.0063245	***	0.0663245	***
% Own group, lagged 3 yrs	0.0099648	***	0.0099648	***
% Foreign, lagged 3 yrs	-0.0004881	ns	-0.0004881	ns
Interacted pown*stabtraj, Own group	0.0014166	ns	0.0014166	ns
Interacted pown*uptraj, Own group	0.0027492	ns	0.0027492	***
Interacted pfor*stabtraj, Foreign	0.0009080	***	0.0009080	***
Interacted pfor*uptraj, Foreign	-0.0010035	***	-0.0010035	ns
Constant	-126.9572000	***	-112.0477000	***
R sq	0.29		0.34	

*** Significant at .01

Neighborhood Composition Effects on Immigrant Incomes

Table 4c. Point estimates for Model 3: with employment

Control	Males		Females	
	Coeff.	Sign.	Coeff.	Sign.
No of children years >7	-0.0212419	***	-0.0883118	***
Family type, single=1	0.0839884	***	-0.1730206	***
Pre-retired, yes=1	-2.8167620	***	-2.7470720	***
Parental leave, yes =1	0.6015340	***	0.4527532	***
Sick, yes=1	0.1923232	***	0.3624586	***
Studying, yes=1	-1.5080030	***	-1.3598800	***
Educ 10-11 years, yes=1	0.2443798	***	0.2803716	***
Educ 12-14 years, yes=1	0.4461239	***	0.3057482	***
Educ 15+, yes=1	0.8896784	***	0.9993633	***
Couple to single, yes=1	0.0614613	***	-0.0820630	***
Single to couple, yes=1	-0.0234535	ns	0.0249183	ns
% Foreign background	0.0096871	***	0.0071727	***
% Own ethnic background	0.0006992	ns	0.0027841	ns
Year	0.0500405	***	0.0458138	***
% Own group, lagged 3 yrs	0.0103979	***	0.0116215	***
% Foreign, lagged 3 yrs	-0.0000125	ns	0.0016833	**
Interacted pown*stabtraj, Own group	0.0007551	ns	-0.0020282	ns
Interacted pown*uptraj, Own group	0.0023692	ns	-0.0037222	***
Interacted pfor*stabtraj, Foreign	0.0005751	ns	0.0010686	***
Interacted pfor*uptraj, Foreign	-0.0010651	***	0.0001505	ns
Empl freq in nhood	0.0240439	***	0.0235619	***
Empl freq in nhood, lagged 3 years	0.0018340	**	0.0054773	***
Constant	-96.5950100	***	-88.2233100	***
R sq	0.31		0.36	

** Significant at .05

*** Significant at .01

Table 4d. Point estimates for Model 4: with interactions.

Control	Males		Females	
	Coeff.	Sign.	Coeff.	Sign.
No of children years >7	-0.0211805	***	-0.0879666	***
Family type, single=1	0.0884121	***	-0.1669639	***
Pre-retired, yes=1	-2.8201140	***	-2.7503730	***
Parental leave, yes =1	0.3015927	***	0.4533231	***
Sick, yes=1	0.1919762	***	0.3620926	***
Studying, yes=1	-1.5082170	***	-1.3598710	***
Educ 10-11 years, yes=1	0.2446677	***	0.2824525	***
Educ 12-14 years, yes=1	0.4463583	***	0.3089164	***
Educ 15+, yes=1	0.8907319	***	1.0046060	***
Couple to single, yes=1	0.0602527	***	-0.0812770	***
Single to couple, yes=1	-0.0264224	ns	0.0219732	ns
% Foreign background	-0.0011655	ns	0.0001042	ns
% Own ethnic background	0.0291223	***	0.0277140	***
Year	0.0504963	***	0.0466267	***
% Own group, lagged 3 yrs	0.0018229	ns	-0.0058936	ns
% Foreign, lagged 3 yrs	0.0014811	ns	0.0025005	ns
Interacted pown*stabtraj, Own group	-0.0075115	ns	-0.0261158	***
Interacted pown*uptraj, Own group	-0.0208591	***	-0.0350628	***
Interacted pfor*stabtraj, Foreign	0.0063447	***	0.0015490	ns
Interacted pfor*uptraj, Foreign	0.0022102	ns	0.0005096	ns
Empl freq in nhood	0.0202409	***	0.0197212	***
Empl freq in nhood, lagged 3 years	0.0025627	***	0.0043790	***
% Own*Empl freq	-0.0005089	***	-0.0004254	***
% Foreign*Empl freq	0.0001888	***	0.0001133	***
% Own, lag*% Empl lag	0.0001547	**	0.0003035	***
% Foreign, lag*% Empl lag	-0.0000306	ns	-0.0000181	ns
% Own Stable*Empl freq	0.0001292	**	0.0003747	***
% Own Upward*Empl freq	0.0003850	***	0.0005029	***
% Foreign Stable*Empl freq	-0.0001028	***	-8.17E-06	ns
% Foreign Upward*Empl freq	-0.0000544	**	-5.99E-06	ns
Constant	-97.2915600	***	-89.4981800	***
R sq	0.31		0.36	

** Significant at .05; *** Significant at .01

Neighborhood Composition Effects on Immigrant Incomes

Unfortunately, the large number of interaction terms produced by our final model makes the interpretation of relationships difficult. To assist in this regard, we used the statistically significant coefficients from the fourth model to compute estimates of individual income variations associated with variations in the shares of co-ethnics and all foreign-born when alternative neighbourhood employment levels are taken into account. Table 5a-c portrays these combined interaction effects of the key neighbourhood context variables. We present a series of examples, intended to address the three research questions we formulated in the introductory section. We use three levels of employment rates to illustrate the combined effects of local employment conditions and variations in ethnic composition, the statistical mean (69 per cent), 2 standard deviations below (39 per cent) and above (98 per cent) the mean. We present three hypothetical examples for each trajectory of change in the level of co-ethnics (stable, upward, downward): (1) substitution of co-ethnics for native Swedes, holding the proportion of people with foreign background constant, (2) substitution of other foreign people for native Swedes holding the proportion of co-ethnics constant, and (3) substituting co-ethnics for other immigrants, holding the proportion of native Swedes constant. Examination of Table 5 reveals the following relationships for each of the three trajectories.

For those in *stable co-ethnic trajectory environments* (it might be in the same neighbourhood or moving among different neighbourhoods having the same percentage own ethnic group), a higher current percentage of co-ethnics has a positive effect on both males and females (see example 1 in Table 5a). Males benefit more than females if the neighbourhood employment level is very low while the opposite is true if employment conditions are very good. It also benefits an immigrant –albeit to a lesser extent– if immigrants having another foreign background are substituted for a native Swede (example 2). Getting more co-ethnics at the expense of other immigrants as neighbours is beneficial, more so for males in weak employment contexts and for females under strong employment conditions (example 3).

For those in *upward trajectory co-ethnic contexts*, the impact of the presence of co-ethnics is still positive except for females in very weak neighbourhood employment contexts (example 4 in Table 5b). The effects of substituting members of other immigrant origins for native Swedes is positive regardless of employment contexts but more positive in strong

employment contexts and more positive for males than females (example 5). There seems to be no or very small effects of substituting own ethnic group members for other immigrants (example 6).

Last, for those experiencing *downward trajectory* (lower proportion of co-ethnics) over time, both males and females loose from ethnic clustering under average or beneficial local employment conditions. Only in very weak employment contexts are effects of clustering positive if members of the same ethnic group substitute for native Swedes (example 7 in Table 5c). The effect of substituting members of other foreign background for a Swede is positive for both genders but especially for males (example 8). Finally, experiencing more co-ethnics at the expense of other immigrants in your neighbourhood has positive effects only in employment-weak neighbourhoods.

Table 5a. Percentage Difference in Immigrant individual's Income, when taking Neighbourhood Employment Rate and Change in Ethnic Compositions into account: *Stable co-ethnic trajectory*.

Example 1: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2σ	Mean	+2σ
Males	15.6	13.6	11.6
Females	7.6	13.2	18.8

*Other foreign-born group share in neighbourhood held constant.

Example 2: Residing in neighbourhood with 5 percentage points *higher other Foreign-born Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2σ	Mean	+2σ
Males	5.1	6.5	7.9
Females	2.2	3.9	5.6

*Own ethnic group share in neighbourhood held constant.

Neighborhood Composition Effects on Immigrant Incomes

Table 5a, continued

Example 3: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Other foreign group**

Sex	SAMS Employment rate		
	-2 σ	Mean	+2 σ
Males	10.9	7.4	4.1
Females	5.8	9.7	13.7

*Share of Swedes in neighbourhood held constant.

Table 5b. Percentage Difference in Immigrant individual's Income, when taking Neighbourhood Employment Rate and Change in Ethnic Compositions into account: *Upward co-ethnic trajectory.*

Example 4: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2 σ	Mean	+2 σ
Males	4.6	4.8	5.2
Females	0.0	2.7	5.5

*Other foreign-born group share in neighbourhood held constant.

Example 5: Residing in neighbourhood with 5 percentage points *higher other Foreign-born Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2 σ	Mean	+2 σ
Males	2.7	4.8	6.9
Females	2.2	3.9	5.6

*Own ethnic group share in neighbourhood held constant.

Table 5b, continued

Example 6: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Other foreign group**

Sex	SAMS Employment rate		
	-2σ	Mean	+2σ
Males	1.8	0.1	-1.5
Females	-2.1	-1.1	0.0

*Share of Swedes in neighbourhood held constant.

Table 5c. Percentage Difference in Immigrant individual's Income, when taking Neighbourhood Employment Rate and Change in Ethnic Compositions into account: *Downward co-ethnic trajectory.*

Example 7: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2σ	Mean	+2σ
Males	0.7	-3.8	-8.1
Females	1.7	-2.9	-7.3

*Other foreign-born group share in neighbourhood held constant.

Example 8: Residing in neighbourhood with 5 percentage points *higher other Foreign-born Group* and 5 percentage points *lower Swedish**

Sex	SAMS Employment rate		
	-2σ	Mean	+2σ
Males	3.8	6.8	9.8
Females	2.2	3.9	5.6

*Own ethnic group share in neighbourhood held constant.

Neighborhood Composition Effects on Immigrant Incomes

Table 5c, continued

Example 9: Residing in neighbourhood with 5 percentage points *higher Own Ethnic Group* and 5 percentage points *lower Other foreign group**

Sex	SAMS Employment rate		
	-2 σ	Mean	+2 σ
Males	5.2	-2.6	-9.5
Females	5.6	-0.8	-7.2

*Share of Swedes in neighbourhood held constant.

Discussion

In the introductory section we formulated three research questions, guiding our empirical analyses. Is an immigrant's income affected if:

1. a member of their own ethnic group replaces a neighbouring native Swede?
2. a member of a different ethnic group replaces a neighbouring native Swede?
3. a member of their own ethnic group replaces a neighbouring immigrant from a different group?

The answer to the second question is yes, positively, in all contexts investigated; in the case of the first and third questions the answer is nuanced in terms of co-ethnic trajectory, employment context and gender. Taking interaction effects and the trajectory of change in co-ethnic clustering over time into account we find that there are positive effects of ethnic clustering for both males and females, but more pronounced under temporally stable co-ethnic conditions. The magnitude of these effects varies by the local employment context. Males living in stable and increasing densities of co-ethnics benefit more than females by substituting a member of own ethnic group, and also of other immigrants, for a native Swede if the employment level in neighbourhood is low. We stress, however, that these observed benefits from clustering appear not to be universal. Because downward trajectory is the plurality category for immigrants in our sample and many on this trajectory experience good neighbourhood employment situations (i.e., situations described in Table 5c examples), a sizable number do not benefit from more co-ethnic

clustering. This result is broadly consistent with our earlier work (Musterd et al, 2008) that the impact of ethnic clustering was contingent upon circumstances, in that case the immigrant's length of stay in own-ethnic enclaves.

It is obviously the case that many circumstances explain the income trajectory of immigrants. With many relevant individual and contextual factors held constant, we have found that the ethnic context does matter and that its importance differs by other contextual properties of the neighbourhood, in particular the overall share of foreign-born and the share of employed residents. There seems to be some gender differences that can be substantial in some circumstances.

That both co-ethnic and immigrant clustering more generally often seems to produce positive outcome in terms of immigrant's income probably has something to do the capacity of local institutions to assist immigrants' labour market integration. Behtoui (2008), Marsden & Gorman (2001), and Pinkster (2008) find that immigrants rely more on formal job searching practices. It might be the case that Swedish institutions, like the Employment Office, manage to do better if they can operate within immigrant clusters.

While Swedish institutions might be more effective when operating in immigrant concentrations, our results indicate that the presence of native Swedes in these immigrant concentration areas does not appear to be beneficial for immigrants' income development. This might have to do with the long-term tendency that native Swedes living in high concentration areas over time perform more poorly in the labour market, and thus represent a non-representative subset of natives. They are also older and are more often singles. Swedes remaining in immigrant-dense neighbourhoods can thus be hypothesised not to be of much help for immigrants residing there. Other research (van Gent & Musterd (2010)) has stressed that natives living in immigrant-dense areas might also pull away from immigrants due to heightened feelings of resentment and competition over housing and job opportunities, further weakening the local social network potential.

Both males and females of all eight minority nationalities included in this study clearly benefit from residing in high employment contexts. If there is one neighbourhood effect that stands out here, it is indeed the importance of the proportion gainfully employed in neighbourhoods (see also Urban (2009)).

Neighborhood Composition Effects on Immigrant Incomes

Females gain less from clustering with other immigrants and gain less from clustering with co-ethnics unless employment levels are high. This finding is consistent with our earlier hypothesis and further strengthens a growing evidence base about the gendered nature of neighbourhood effects (Galster, Andersson and Musterd (2010)). We cannot be sure of the origins of this difference among immigrants here, but we think that the combination of intra-immigrant cultural pressures discouraging female labour force participation and limited, information-poor inter-female local social networks likely is responsible.

The results presented here should not be used for arguing for ethnic residential segregation. There are many other aspects of social and political integration that may be harmed by increasing levels of ethnic segregation. What we have shown is that the levels of co-ethnic clustering, or of clustering of immigrants more generally, is typically not detrimental but rather positive for immigrants' work income careers. The causes for immigrants' overall weak employment positions can therefore not be reduced to an issue of geographical distributions of minorities per se. The often presumed causal link between segregation and labour market integration is only supported by our findings for those immigrants being in a downward co-ethnic trajectory in strong employment contexts. For all other, the opposite is the case.

Caveats

It is important to remember that most of the variation in percentage own-ethnic group occurs within a limited range of mostly low-density ethnic clusters. The Swedish situation is therefore completely different compared to, for instance, most of the U.S. ethnic or immigrant urban scene (Massey & Denton (1993)). It is also different from the level of ethnic clusters identified in some UK cities (Johnston et al (2002) and (2005), Peach (2010), Poulsen and Johnston (2006)). Median values of percentage own-ethnic group in neighbourhoods are below 10 per cent in all groups and around 5 per cent for the entire population under study.

Finally and unfortunately, this long panel study by definition excludes the type of immigrants most discussed in the current Swedish segregation debate: more recently arrived refugee immigrants. It goes without saying that long panel studies require that people have been resident for a considerable time in the country. We have focused our

attention only to immigrants that (a) had settled in Sweden before 1991 and (b) remained there until 2006. Whether ethnic clustering has other and more negative effects for more recently arrived immigrants cannot be answered by this study.

For all of these reasons above, we caution against generalising from our findings. Nevertheless, we think that we have supplied strong evidence in this paper that neighbourhood ethnic and employment context significantly shaped the economic fortunes of the particular Swedish immigrant groups analysed. This process appears considerably more nuanced and gendered than conventionally perceived, however.

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References

- Andersson, R. (1999) "Divided cities" as a Policy-based Notion in Sweden. *Housing Studies* 14 (5): 601-624.
- Andersson, R. (2006) "Breaking segregation": rhetorical construct or effective policy? The case of the metropolitan development initiative in Sweden, *Urban Studies*, 43(4): 787-799.
- Andersson, R. (1999) "Divided cities" as a Policy-based Notion in Sweden. *Housing Studies*, Vol. 14, No. 5, 601-624.
- Andersson, R. (2012) Understanding ethnic minorities' settlement and geographical mobility patterns in Sweden using longitudinal data. In: Gemma Catney and Nissa Finney (Eds). *Minority Internal Migration in Europe*, pp. 263-291. Aldershot: Ashgate.
- Andersson, R., Bråmån, Å., Hogdal, J., 2009, *Fattiga och rika - segregerad stad. Flyttningar och segregationens dynamik i Göteborg 1990-2006*. Stadskansliet i Göteborg.
- Andersson, R., Bråmån, Å., Hogdal, J., 2007, *Segregationens dynamik och planeringens möjligheter. En studie av bostadsmarknad och flyttningar i Malmöregionen*. Malmö: Stadskontoret.
- Behtoui, A., (2008) Informal Recruitment Methods and Disadvantages of

Neighborhood Composition Effects on Immigrant Incomes

- Immigrants in the Swedish Labour Market. *Journal of Ethnic and Migration Studies* 34 (3), 411-430.
- Blasius, J. & Friedrichs, J. (2007) Internal Heterogeneity of a Deprived Urban Area and Its Impact on Residents' Perception of Deviance. *Housing Studies* 22(5): 753-780.
- Boal, F.W. (1976) Ethnic Residential Segregation. In: D.T. Herbert and R.J. Johnston (Eds.) *Social Areas in Cities*; volume 1: Spatial Processes and Form. pp. 41-79. London, etc.: John Wiley & Sons.
- Borjas, G., (1995) Ethnicity, Neighborhoods, and Human-Capital Externalities, *American Economic Review*, LXXXV, 365–390.
- Borjas, G., (1998) "To Ghetto or Not to Ghetto: Ethnicity and Residential Segregation," *Journal of Urban Economics*, XLIV, 228 –253.
- Cutler, D., and Glaeser, E. (1997) "Are Ghettos Good or Bad?" *Quarterly Journal of Economics*, CXII, 827– 872.
- De Graaff, T. and de Groot, H. F. L. (2004). *Ethnic Concentration and Human Capital Formation*, pp. 381–409. Elsevier, Urban Dynamics and Growth.
- Dietz, R. (2002). The Estimation of Neighborhood Effects in the Social Sciences. *Social Science Research* 31, 539-575.
- Edin, P-A., Fredriksson, P. and Åslund, O. (2003) Ethnic Enclaves and the Economic Success of Immigrants: Evidence from a Natural Experiment. *The Quarterly Journal of Economics*, 329-357.
- Finney, N., and Simpson, L. (2009) Internal migration and ethnic groups: evidence for Britain from the 2001 Census, *Population, Space and Place*, 14: 63-83.
- Friedrichs, J. (1998). Do poor neighborhoods make their residents poorer? Context effects of poverty neighborhoods on their residents. In H. Andress (Ed.), *Empirical Poverty Research in a Comparative Perspective*. pp. 77-99. Aldershot: Ashgate.
- Galster, G. (2008) Quantifying the Effect of Neighbourhood on Individuals: Challenges, Alternative Approaches and Promising Directions, *Journal of Applied Social Science Studies [Schmollers Jahrbuch/ Zeitschrift für Wirtschafts- und Sozialwissenschaften]* 128 (1) pp. 7-48.
- Galster, G. (2012) The Mechanism(s) of Neighbourhood Effects: Theory, Evidence, and Policy Implications, in van Ham, M., Manley, D., Bailey, N., Simpson, L., Maclennan, D. (eds) *Neighbourhood Effects Research: New Perspectives*, pp. 23-56. Dordrecht, NL: Springer.
- Galster, G., Andersson, R., & Musterd, S., 2010, Who Is Affected by Neighbourhood Income Mix? Gender, Age, Family, Employment and

- Income Differences. *Urban Studies* 47:(14) 2915-2944.
- Gephart, M. (1997) Neighborhoods and Communities as Contexts for Development, In: J. Brooks-Gunn & G. J. Duncan & J. L. Aber (Eds.), *Neighborhood Poverty: vol. I. Context and Consequences for Children*, pp. 1-43. New York: Russell Sage Foundation.
- Gent, W.P.C. van & S. Musterd (2010) Isolement en Angst: PVV in Haagse buurten bij de gemeenteraadsverkiezingen van 2010. *Beleid en Maatschappij*, 37(2), pp. 140-153.
- Jencks, C., & Mayer, S. (1990). The Social Consequences of Growing Up in a Poor Neighborhood. In L. Lynn & M. McGahey (Eds.), *Inner-city Poverty in the United States* (pp. 111-186). Washington, DC: National Academy Press.
- Johnston, R., Forrest, J. and Poulsen, M. (2002) 'Are there ethnic enclaves/ghettos in English cities?', *Urban Studies*, 39(4): 591-618.
- Knox, P, and S. Pinch (2006). *Urban Social Geography*. Harlow, England: Pearson Education Limited.
- Marsden, P.V. and Gorman, E.H. (2001) "Social networks, job changes, and recruitment". In Berg, Ivar and Arne L. Kalleberg (Eds.) *Sourcebook of Labor Markets: Evolving Structures and Processes*. New York: Kluwer Academic.
- Massey D S, 1985, Ethnic residential segregation: a theoretical synthesis and empirical review. *Sociology and Social Research* 69: 315-350.
- Massey, R. & Denton, N. (1993) *American Apartheid*. Cambridge, Mass.: Harvard University Press.
- Moore, G. (1990) "Structural Determinants of Men's and Women's Personal Networks", *American Sociological Review* 55: 726-735.
- Musterd, S. & Andersson, R. (2005) Housing Mix, Social Mix and Social Opportunities. *Urban Affairs Review*, 40 (6), 761-790.
- Musterd, S., Andersson, R., Galster, G. & Kauppinen, T., 2008, Are immigrants' earnings influenced by the characteristics of their neighbours?, *Environment and Planning A*, Vol. 40, pp. 785-805.
- Peach, C. (2009) Slippery Segregation: Discovering or Manufacturing Ghettos?, *Journal of Ethnic and Migration Studies*, 35: 9, 1381 – 1395.
- Phillips, D. (2010) Minority Ethnic Segregation, Integration and Citizenship: A European Perspective. *Journal of Ethnic and Migration Studies*, 36(2);,209-225.
- Pinkster, F. (2008). *Living in Concentrated Poverty*. PhD dissertation, Department of Geography, Planning, and International Development Studies. University of Amsterdam.

Neighborhood Composition Effects on Immigrant Incomes

- Poulsen, M. and Johnston, R. (2006) Ethnic residential segregation in England: getting the right message across, *Environment and Planning A*, 38(12): 2195-9.
- Proposition 1997/98:165, Utveckling och rättvisa - en politik för storstaden på 2000-talet. (Stockholm: The Government's office).
- Robinson, Vaughan, Roger Andersson & Sako Musterd (2003) *Spreading the 'Burden'? A review of policies to disperse asylum seekers and refugees*. Bristol: The Policy Press.
- Sampson, R. (2001) "How do communities undergird or undermine human development? Relevant contexts and social mechanisms." Pp.3-30 in A. Booth and A. Crouter, eds. *Does It Take a Village? Community Effects on Children, Adolescents, and Family*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Sampson, R., Morenoff, J., & Gannon-Rowley, T. (2002). Assessing 'Neighborhood Effects': Social Processes and New Directions in Research. *Annual Review of Sociology* 28, 443-478.
- Smith, S. (2000) Mobilizing social resources: race, ethnic and gender differences in social capital and persisting wage inequalities. *Sociology quarterly* 41, 509-537.
- Urban, S. (2009) 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, *Urban Studies* 46:3, 583-603.
- van der Laan Bouma-Doff, W. (2007) 'Confined Contact: Residential Segregation and Ethnic Bridges in the Netherlands', *Urban Studies*, 44:5, 997 - 1017.
- Vervoort, M. (2011) Living together apart? Ethnic concentration in the neighbourhood and ethnic minorities' social contacts and language practices. The Netherlands Institute for Social Research, University of Utrecht.
- Waldinger, R. and Lichter, M. I. (2003) *How the other half works. Immigration and the Social Organization of Labor*. Berkeley: University of California Press.
- Weinberg, B., Reagan, P., and Yankow, J. (2004). Do neighborhoods affect work behavior? Evidence from the NLSY79. *Journal of Labor Economics* 22, 891-924.

Appendix A

Table A1a. Descriptive Statistics for all variables used in Model 4: Males

Variable	Total Observed: 676923			
	Mean	StdDev	Min	Max
Yearofbirth	1958	7.15	1946	1971
Sex	1	0	1	1
chiu7	1.08	2.32	0	23
famtype	0.58	0.49	0	1
preret	0.10	0.30	0	1
parlea	0.17	0.37	0	1
sick	0.15	0.36	0	1
stud	0.04	0.20	0	1
educ1 (<12yrs)	0.60	0.49	0	1
educ2 (12yrs)	0.15	0.36	0	1
educ3 (13-14yrs)	0.12	0.32	0	1
educ4 (>15yrs)	0.12	0.32	0	1
cotosing (couple to single, t-1 to t)	0.03	0.16	0	1
singtoco (single to couple, t-1 to t)	0.03	0.16	0	1
lnw I (dependant variable)	5.76	3.19	0	12.24
lminc (Labour market income, 100 SEK)	1883	328	1240	2422
pforback (% foreign background)	32.32	22.58	0.71	100
pown (% own ethnic group)	5.27	5.02	0.008	100
Year	2000	3.74	1994	2006
Emplfreq in nhood (age 20 to 64)	68.87	14.66	0	100
pownlag (t-3)	5.50	5.25	0.008	100
pforlag (t-3)	31.71	22.08	0.71	100
emplag (t-3)	68.84	14.82	0	100
strabtrajfor (stable trajectory, % foreign born)	0.32	0.47	0	1
strabtrajown (stable trajectory, % own group)	0.23	0.42	0	1
uptrajfor (upward trajectory, foreign born)	0.48	0.50	0	1
uptrajown (upward trajectory, own group)	0.35	0.48	0	1
Interacted pown strabtrajown	1.47	3.76	0	41.26
Interacted pown uptrajown	1.78	3.97	0	100
Interacted pfor stabtrajfor	11.50	22.52	0	97.12
Interacted pfor uptrajfor	16.71	22.69	0	100
Interacted pown emplfreq	338.32	298.55	0	5000
Interacted pfor emplfreq	1951.05	991.09	0	6842.11
Interacted pownlag emplfreqlag	355.41	321.59	0	6666.67
Interacted pforlag emplfreqlag	1918.7	985.95	0	10000
Interacted pownstabtraj emplfreq	97.26	235.21	0	2694.92
Interacted pownuptraj emplfreq	108.21	229.19	0	5000
Interacted pforstabtraj emplfreq	664.37	1143.23	0	6079.67
Interacted pforuptraj emplfreq	1003.94	1233.82	0	6842.11

Neighborhood Composition Effects on Immigrant Incomes

Table A1b. Descriptive Statistics for all variables used in Model 4: Females

Variable	Total Observed: 782184			
	Mean	StdDev	Min	Max
Yearofbirth	1957	7.19	1946	1971
Sex	2	0	2	2
chiu7	1.01	2.25	0	25
famtype	0.58	0.49	0	1
preret	0.14	0.35	0	1
parlea	0.25	0.43	0	1
sick	0.22	0.41	0	1
stud	0.07	0.26	0	1
educ1 (<12yrs)	0.56	0.50	0	1
educ2 (12yrs)	0.16	0.36	0	1
educ3 (13-14yrs)	0.14	0.35	0	1
educ4 (>15yrs)	0.14	0.34	0	1
cotosing (couple to single, t-1 to t)	0.02	0.15	0	1
singtoco (single to couple, t-1 to t)	0.02	0.14	0	1
lnw I (dependant variable)	5.65	3.15	0	12.24
lminc (Labour market income, 100 SEK)	1886	328	1240	2422
pforback (% foreign background)	30.02	21.55	1.02	100
pown (% own ethnic group)	5.06	4.69	0.013	100
Year	2000	3.74	1994	2006
Emplfreq in nhood (age 20 to 64)	70.66	13.62	0	100
pownlag (t-3)	5.32	.46	0.014	100
pforlag (t-3)	29.49	21.13	0.98	100
emplag (t-3)	70.71	13.78	0	100
strabtrajfor (stable trajectory, % foreign born)	0.34	0.48	0	1
strabtrajown (stable trajectory, % own group)	0.26	0.44	0	1
uptrajfor (upward trajectory, foreign born)	0.48	0.50	0	1
uptrajown (upward trajectory, own group)	0.31	0.46	0	1
Interacted pown strabtrajown	1.53	3.64	0	50
Interacted pown uptrajown	1.49	3.56	0	100
Interacted pfor stabtrajfor	11.15	21.39	0	97.12
Interacted pfor uptrajfor	15.57	21.26	0	100
Interacted pown emplfreq	336.78	285.68	0	5000
Interacted pfor emplfreq	1873.78	973.25	0	6842.11
Interacted pownlag emplfreqlag	356.13	307.74	0	6666.67
Interacted pforlag emplfreqlag	1845.83	969.38	0	10000
Interacted pownstabtraj emplfreq	104.24	234.09	0	5000
Interacted pownuptraj emplfreq	95.17	214.24	0	5000
Interacted pforstabtraj emplfreq	668.03	1112.36	0	6079.67
Interacted pforuptraj emplfreq	970.92	1196.69	0	6842.11