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# **Getting the First Job – Size and Quality of Ethnic Enclaves for Refugee Labor Market Entry**

Johan Klaesson, Özge Öner and Dieter  
Pennerstorfer

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Johan Klaesson<sup>a,b</sup>, Özge Öner<sup>a,b,c</sup> & Dieter Pennerstorfer<sup>d</sup>

## Abstract

This article analyses the relationship between the size and the quality of ethnic enclaves on immigrants' labour market integration. Using exogenously defined grid cells to delineate neighbourhoods, we find robust empirical evidence that the employment rate of the respective immigrant group in the vicinity (as a measure of enclave quality) facilitates labour market integration of new immigrants. The influence of the overall employment rate and the share of co-nationals in the neighbourhood tend to be positive, but less robust. We thus conclude that the quality is more important than the size of the ethnic enclave in helping new immigrants finding jobs.

**Keywords:** Refugee immigrants, Ethnic enclave quality, Labor market outcomes

**JEL codes:** F22, J15, J60, R23

<sup>a</sup> Centre for Entrepreneurship and Spatial Economics (CEnSE), Jönköping International Business School (JIBS), Jönköping, Sweden.

<sup>b</sup> Research Institute of Industrial Economics (IFN), Stockholm, Sweden.

<sup>c</sup> University of Cambridge, Department of Land Economy, England.

<sup>d</sup> Johannes Kepler University, Linz, Austria.

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## 1 Introduction

Since the peak of the surge of refugee immigration to Europe in the fall of 2015, public debate has been dominated by immigration and the integration of the new comers in the receiving countries. The most important form of integration is widely seen as entering the labor market. The policy makers put much of their attention on a number of schemes that can transcend the newcomers from labor market outsiders to insiders. Following a big body of literature on ethnic enclaves, we address the issue of labor market integration of new comers by examining the probability to find their first job with respect to their immediate environment. In the literature there are many arguments supporting the notion that immigrant enclaves play a key role in how immigrants are sorted into the labor market. Our results show that the important aspect of an enclave is its qualitative nature in terms of the intensity of employment among an immigrant's co-ethnic peers. Overall size or density, on the other hand, does not contribute one way or the other.

We contribute to the existing literature by emphasizing the importance of enclave quality rather than enclave size for labor market entry. Further, we use two distinct immigrant groups, consisting of individuals that arrived to Sweden during two waves of forced immigration, which allows us to say something about the size and the relative importance of the effect from enclave quality. The use of exogenously determined physically standardized squares puts limits on some of the cross-enclave variation in different dimensions. Also, in this setting *scale* (size, population) and *density* (people per square kilometer) are one and the same thing, i.e. measured as per square-kilometer.

From earlier research we know that immigrants live more spatially concentrated than many other groups. We also know that this fact has a bearing on immigrants' integration into society and into the labor market in particular. Bartel (1989) and Borjas (1998) demonstrated that immigrants chiefly concentrate spatially to larger cities. Further, within these cities they concentrate and there is evidence of what is usually labelled segregation (Edin et. al., 2003, Cutler et. al. 2008).

There is consensus on the fact that ethnic enclaves are important for how/if immigrants enter the labor market successfully. Yet, there is no agreement about the size or even the direction of the effect. One line of argument is that the spatial concentration of immigrants facilitates employment and entrepreneurship among immigrants through social network effects (Edin et. al., 2003, Cutler et. al., 2008, Patacchini and Zenou, 2012; Bayer

et al., 2008). The opposite line of the argument is that spatial concentration and the resultant isolation from the native population brings about a distance from opportunities and risks lock-in effects (Borjas, 2000). What is largely an empirical literature is still out there to establish if and through which mechanisms ethnic enclaves can facilitate labour market integration of immigrants, to which we aim to contribute.

### *Quality of ethnic enclaves*

In the initial discussions concerning ethnic enclaves, the focus was put on basic economic mechanisms working through supply and demand channels. More recent literature adds a further complementary focus on more quality-oriented characteristics of ethnic enclaves, which may have the potential to influence the labour market outcomes of immigrants. These mechanisms work in a rather different way. The discussion on enclave quality focus on the constituent parts making up the enclave. Depending on how the enclave is built-up there can be both negative and positive results for the people living in them (Cutler et al., 2008, Edin et al., 2003, Andersson et al., 2017, Andersson et al., 2017). What is often discussed as a quality aspect is the transfer of useful information between co-national peers within an enclave. Some information may be more tacit. For example, it may entail information about the institutions (formal or informal) surrounding the search for a job. Other information may be more tangible. For example, it may be acquired information about an existing job opportunity or contact information to a potential employer accessed through ethnic peers living in the same enclave. The literature sometimes says that ethnic enclaves may facilitate access to the labour market through special information channels. However, the empirical evidence that this is actually the case is rather limited.

In our empirical analysis, we use individual-level micro-data covering the whole Swedish population for the period from 1992 to 2013. The data is geo-coded which allow us to pinpoint each individuals' residential locations down to exogenously assigned 1 by 1-kilometer grid cells covering the Stockholm metropolitan area. In identifying the connections between individuals and their peers nearby, we use two distinct immigration groups. The first group consist of people arriving from the Balkans between the years 1992-1993 following the Balkan wars. The second group is from the Middle East that arrived in Sweden between the years 2005-2006 following the Iraq war. Individuals show

up in the database for the first time when they have obtained a work permit, and we observe their first contact with the labour market as our outcome variable against a vector of individual and neighbourhood level variables.

## **2 Related literature - enclaves and labour market entry**

It is a common and well-known pattern that immigrants in many countries live segregated as a group, but each immigrant group are sorted into different places (Borjas, 1995, 2000). This kind of geographical sorting may be voluntary if immigrants prefer places with a large share of co-national inhabitants sharing the same ethnic and cultural background and sharing the same language. But geographical sorting can also be the result of institutional mechanisms and/or path-dependence. The institutions may work on the national or sub-national level and may change the geographical distribution for some sub-population. Sometimes this is the result without any explicit intentions being at hand. For example, land-use regulations or zoning laws may render some places and some parts of the housing market too expensive for a certain income group. In much the same manner it may happen that rent control reduces churn in some attractive and/or central locations. This hinders the availability of affordable dwellings in central locations. Centrally placed (by the authorities) newly arrived immigrants (refugees) in some places may also initiate path-dependence and the development of clusters of specific minorities that may evolve and grow over time.

These different possibilities do not exclude one another and may co-exist. At the same time, they are not universal in their manifestation. In reality, it is probably a combination of mechanisms at work when ethnic enclaves are formed, and segregation develops over time. Through history, many great cities (or parts of them) have been characterized by concentrated diasporas. Using the existence of such areas, we examine how the qualitative nature of ethnic concentration relates to the labour market outcomes of individual immigrants. In what way do living in an ethnic enclave relate to the labor market entry of immigrants?

Labour market sorting of immigrants and its connection to segregation and ethnic enclaves is a well-researched area. Edin et al. (2003) made a seminal contribution when using a Swedish government placement policy of refugee immigrants. The policy was in place from 1985 until 1994. The authors conclude that ethnic enclaves improve the labour market outcomes for less-skilled immigrants. At the same time, they find that high-income

immigrants gain more from living in an ethnic enclave compared to those with low incomes. Cutler et al. (2008) similarly find that for first-generation immigrants' ethnic enclaves and segregation was useful. Also, in the American context, Beaman (2012) examines the dynamic consequences of social networks for the labour market outcomes of refugees. Beaman finds that an increase in the size of the network brings an effect where a one standard deviation increase of the number of network members in the year before the arrival of a refugee immigrant lowers his probability of being employed by 4.8 per cent. For the Canadian labour market, Warman (2007) study the effect of living in an ethnic enclave on the income increase of immigrants. The author finds negative effects on immigrant's weekly income increases.

Estimating the effect of enclaves comes with the obvious problem of potential endogeneity. It is hard to tease out how much of the estimated effect that comes from ethnic peers in the neighbourhood (Manski, 1993). The effect of ethnic enclaves and segregation risk being overestimated because of potential common factors that influence both the labour market outcome of the residents as well as the segregation as such. Another type of problem is what sort of benchmark that should be used for assessing the effects on the labour market outcomes. A common way is to use natives to tease out if estimates are large or small. This approach may, however, be a bit problematic since the mechanisms at work may be very different between immigrants and natives' reasons for ending up in a specific area (Warman, 2007). An alternative is to look at several immigrant groups in the same framework. In the present study, we follow this approach and study immigrants originating from both the Balkans and the Middle East.

At times there may be a "dark side" to close immigrant networks. An ethnic enclave can turn into an economic restraint by excluding network members from outside alternatives. Also, it may be hard within the network to acquire the necessary skills needed for successful integration into the labour market, e.g. language proficiency (Borjas, 2000). Concerning the dark side of ethnic enclaves and networks, Borjas (2000) say that low-skilled individuals have a harder time realising opportunities in the labour market outside the enclave. This lack of opportunity they substitute for with existing possibilities within the enclave. Skills such as relevant education is an important variable when assessing the effect on the labour market outcome of ethnic enclaves. Both Edin (2003) and Borjas (2000) find that for highly educated individuals there is no effects from living in a segregated neighborhood. In an earlier work, Borjas (1998) studied the connection between

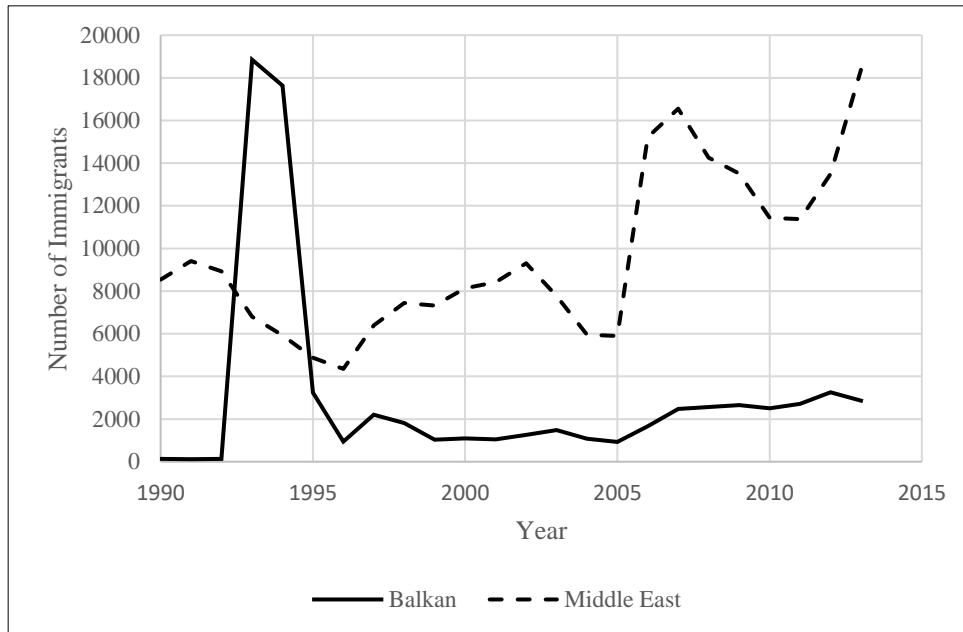
ethnicity and immigrants' choices of place to dwell and the choice of living in an ethnic enclave. Borjas (1998) provides a theoretical and empirical analysis of the determinants influencing the choice of whether to reside in a segregated residential area or not. The finding is that there is dispersion within and across ethnic groups concerning the probability of living in segregated neighborhoods. Such observation is important because it gives motivation to why one should separate different ethnic groups when studying the formation and effects of ethnic enclaves. Borjas (1998) also find that factors such as income, parenting skills and ethnic capital decides the ethnic mix of neighborhoods where people choose to live. Large income differences between groups have shown to increase segregation even further.

### **3 Data and empirical strategy**

In this section, we introduce our data and describe how we delineate neighbourhoods (or enclaves) and how we capture neighbourhood characteristics. We, finally, outline our empirical strategy to link neighbourhood characteristics to the individual outcome –that is getting the first job after arriving in Sweden. The empirical analysis is based on a full population registry of microdata on individuals maintained by Statistics Sweden. The data is a panel, covering the entire population in Sweden over the period 1993 to 2015. We have access to a number of individual characteristics including the origin from where the individual came from. Note that all neighbourhood characteristics are calculated based on this exhaustive dataset. We aim to disentangle the relationship between a number of individual and enclave level variables and the probability of individuals to get a job.

We restrict our analysis to immigrants from the Balkans, arriving in Sweden in 1993 and 1994, and immigrants from the Middle East, arriving in 2005 and 2006. Figure 1 shows migration patterns to Sweden of these two immigrant groups over the past 25 years and motivates the selection of the populations studied in the analysis. The Yugoslavia wars (and in particular the Bosnian War of 1992-1995) and the Second Iraq War (Third Gulf War, 2003-2011) led to a strong increase in immigration to Europe and also to Sweden. The figure shows very different patterns over time for the two groups and thus allows us to evaluate the heterogeneity of potential enclave effects across immigrant groups. In our empirical analysis, we focus on immigrants moving to Stockholm metropolitan region when coming to Sweden. The data allows us to track the individuals over time. As we are

primarily interested in labour market integration, we keep individuals in our sample until they find their first job, and discard them afterwards. Finding a job is defined as receiving a strictly positive income (but we apply a more restrictive definition in the sensitivity analysis).



**Figure 1:** Immigrants from two regions by entry year 1990-2015,

Data source: Statistics Sweden, figure made by authors

Neighbourhoods are defined as grid cells of one-kilometre size. Using exogenously determined identically sized squares to delineate neighbourhoods is beneficial, as they are standardised in size. Note that with this definition *scale* (size, population) and *density* (people per square kilometre) can be used interchangeably, as both types of variables are measured as per square-kilometre. Neighbourhoods are characterized by a number of variables, like the size of the neighbourhood in terms of the number of people that are living there. The role of this variable is to pick up size-related effects. This could be, for instance, that the sheer amount of information about job opportunities are larger in densely populated areas.

The three variables of interest are related to the size of the ethnic enclave and the quality of the neighbourhood: The first of these variables is the overall employment rate in

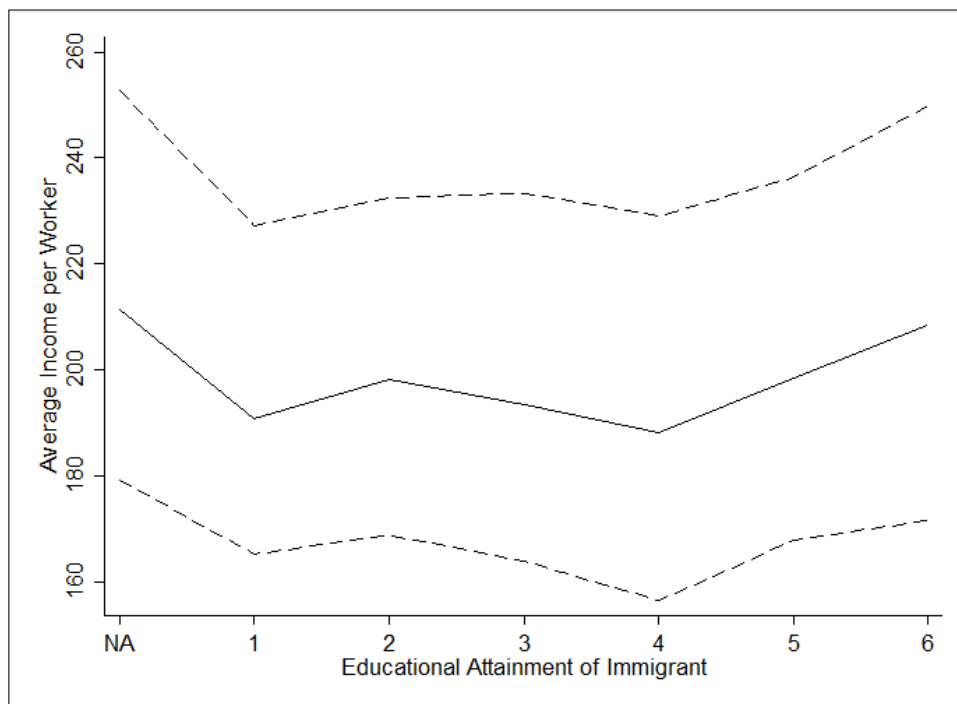


the neighbourhood. The idea is that a higher share of employed individuals increases the availability of labour market-related information in general and job openings in particular. Theory on immigration and networks suggests that information may flow more easily between co-national peers because ethnic and cultural peers are often members of the same social networks. New immigrants may thus benefit from labour market-related information transmitted through this network. We account for this by introducing two variables related to the immigrant's own ethnic group. The first of these variables is the share of immigrants that belong to the own group. That is, the more peers you have around you, the likelier it is that you can receive some useful information through this group. The second variable on ethnic peers captures the employment rate of this group. Members of the ethnic network already active in the labour market are expected to have more valuable information to share. These variables can serve as proxies for information potentially available to the individual immigrant. Additionally, the intensity of labour market integration of the ethnic network may change the social norms in this group regarding working or work ethics, and may thus influence individual behaviour (Bertrand et al., 2000). The more people that work in a neighbourhood and the more of them that work belong to the same ethnic group, the likelier it is that there is some social pressure in favour of looking intensively for a job, and some stigma for those that have not yet been able to land a job.

Finally, we include the distance between the neighbourhood and the central business district (CBD) of the municipality to control for possible knowledge spillovers that may come from the CBD. Since the CBD represents the central parts of the local community, the further away a neighbourhood is located, the more peripheral it is relative to the other parts of the municipality. In essence, it means that we control for the neighborhood's place in the urban hierarchy.

The dataset allows us to control a variety of individual characteristics, such as mobility (i.e. whether the individual has moved last year or at least once during the studied time period), gender, age (i.e. age, age squared, and whether the individual is within normal working age), family status (i.e. belong to a family and having children or being a single parent with children), education (in seven categories regarding the highest level of education attainment) and the year of arrival to Sweden. We further include year-municipality fixed effects to account for business cycle effects and unobserved local labour market heterogeneity.

Figure 2 below shows the initial placement of immigrants divided up into education attainment group. Neighbourhoods (squared grid cells) are characterised by average incomes per worker. In the figure, we see that there is no obvious pattern. The lines are virtually horizontal with only very small variations. Such pattern indicates that there is no obvious initial sorting of immigrants into their first residential neighbourhood. If it were the case that high ability immigrants are sorted into high-quality neighbourhoods, we would then see a relationship between average income in the neighborhood and immigrant's highest educational attainment. In the figure, the solid line denotes the median values of the average income, and the dashed lines denote the first and the third quartile, respectively. Both the median and the variation in neighbourhood quality seem to be uncorrelated to the immigrants' educational attainments.



**Figure 2:** *Initial placement of immigrant group relative to educational attainment*

Notes: The figure relates the average wage income per worker (in 1,000 Swedish Crowns) in the location (1km x 1km grid cell) of the first place of residence of immigrants to the immigrants' educational attainments. The solid line denotes the median values of the average income, whereas the dashed lines denote the first and the third quartile, respectively. The educational attainment is taken from one year after the arrival. The respective categories refer to compulsory education of less than 9 years (1), compulsory education of nine years (2), upper secondary education of 2 years at most (3), upper secondary school of 3 years (4), post-secondary education of less than 3 years (5) and post-secondary education of 3 years or more (6). "NA" denotes that educational attainment is not available.

Table 1 below describes each of the variables along with some descriptive statistics for them. For the dependent variable, the average is 0.15, which means that 15 per cent of all unemployed immigrants find their first jobs within the next year. Looking at the location characteristics of the 1 by 1-kilometer squares we observe some great differences between places. Average population size is about 3400 inhabitants; the smallest one only has one person living there while the biggest place has over 22 thousand people. The share of immigrants of the same region of origin is about 16 per cent. Again, the variation between squares is staggering, going from virtually zero to 100 per cent. The overall employment rate is about 60 per cent, again accompanied by high variation between 0 and 96 per cent. The mean employment rate of the immigrants' ethnic peers in the respective neighbourhoods is only 44 per cent and thus considerably lower, but variation across space is much larger compared to the general population. The distances from neighbourhoods to municipality CBDs vary from zero to 34 kilometres with a mean of almost six kilometres.

**Table 1: Summary statistics**

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
Endogenous Variable						
First job	Dummy=1 if first job with wage > 0	44,230	0.150	0.358	0	1
LOCATION CHARACTERISTICS (for one square kilometre cell)						
Population	Number of inhabitants	44 230	3430.184	2095.213	1	22809
Share immigrant group	Immigrants over population in %	44 230	15.614	17.165	0.01	100
Employment rate	Employed over population in %	44 230	59.132	8.770	0	96.20
Employment rate immigrant group	Employed of immigrants over immigrant population in %	44 230	44.368	18.063	0	95.45
Distance CBD	Distance to CBD of municipality	43 857	5.838	4.415	0	33.96
INDIVIDUAL CHARACTERISTICS						
Moved	=1 if changed residence previous year	44 230	0.154	0.361	0	1
Moved at least once	(=1 if changed residence at least once after arrival	44 230	0.431	0.495	0	1
Female	=1 if female	44 230	0.556	0.497	0	1
Working age	=1 if age<=64	44 230	0.875	0.330	0	1
Age	age	44 230	41.683	16.435	16	103
Family with children	=1 if family with children	44 230	0.380	0.485	0	1
Single parent with children	=1 if single parent with children	44 230	0.045	0.208	0	1
Education 1	Primary and lower secondary education, less than 9 years	44 230	0.297	0.457	0	1
Education 2	Primary and lower secondary education, 9 (or 10) years	44 230	0.156	0.363	0	1
Education 3	Upper secondary education, less than three years	44 230	0.064	0.245	0	1
Education 4	Upper secondary education, 3 years	44 230	0.104	0.305	0	1
Education 5	Post-secondary education, less than two years	44 230	0.107	0.309	0	1
Education 6	Post-secondary education, two years or longer	44 230	0.122	0.327	0	1
Education 7	Postgraduate education	44 230	0.145	0.353	0	1

For the variables at the individual level, we see that 15.4 per cent of the population changed residence in the previous year. Over 43 per cent moved at least once for the duration they were in the dataset. 55.6 per cent of all individuals are female. Note that this does not mean that there are more females in the data, rather it means, they stay longer in the database, i.e. it takes them a longer period to find a job (see estimates below). 87.5 per cent are in working age. Average age is a little bit above 41 years, and 38 per cent live in a family with children. Only 4.5 per cent are singles with children.

Below we outline the empirical model to estimate the relationship between labour market integration, individual and neighbourhood characteristics. The dependent variable,  $y_{imr(t)}$ , is binary and takes the value 1 if individual  $i$  belonging to ethnic group  $m$  living in region (neighbourhood)  $r$  finds a first job at time  $t$ . Immigrants are discarded from the sample after finding their first job.  $X_{mr(t-1)}$  represents a set of explanatory variables describing region  $r$  and ethnic group  $m$  residing in region  $r$  at time  $t-1$ .  $Z_{ir(t-1)}$  is a set of explanatory variables controlling for individual heterogeneity. The probability that  $y_{imr(t)}$  equals 1 is given by a function of the two vectors of covariates  $X_{mr(t-1)}$  and  $Z_{ir(t-1)}$ . In order to estimate the relationship, we use a logit model. Thus, the empirical model can be represented by the following function:

$$p_{imr(t)} \equiv Pr(y_{imr(t)} = 1 | X_{mr(t-1)}, Z_{ir(t-1)}) = F(X'_{mr(t-1)}\beta^r + Z'_{ir(t-1)}\beta^i) \quad (1)$$

And the logit model can be formulated as follows:

$$Pr(y_{imr(t)} = 1 | X_{mr(t-1)}, Z_{ir(t-1)}) = \frac{\exp(X'_{mr(t-1)}\beta^r + Z'_{ir(t-1)}\beta^i)}{1 + \exp(X'_{mr(t-1)}\beta^r + Z'_{ir(t-1)}\beta^i)} \quad (2)$$

$\beta^r$  ( $\beta^i$ ) is a vector of parameters for neighborhood-specific (individual-specific) variables to be estimated.

#### **4 Results: Enclave size, neighbourhood quality and labour market integration**

In this section, we present the results from estimating a number of variants of the base model introduced above. We start with a very sparse model and build up the main specification, and finally introduce a number of alternative specifications to test the stability and robustness of our results. All regressions are reported in tables 2 to 6. In table

2 we build up the model gradually to reveal the variables that seem most important to find out how different variables relate to one another. In table 3 the main results are presented. Some robustness checks are made by using initial neighbourhood variable values or by instrumenting current (t-1) values with initial values. In addition, the estimations are made for the two sub-groups of immigrants, originating from the Balkans and the Middle East, separately. In table 4 we re-estimate the models from table 3 but include two variables describing the presence and the labour market integration of other immigrant groups in the neighbourhood. We do so to find out if our results are obscured by some general immigrant effect regardless of origin. In Table 5 and Table 6 we present regressions on sub-samples by dividing the sample along neighbourhood (table 5) and individual characteristics (table 6).

#### 4.1 Main results

In the first three models reported in Table 2, we include individual-level characteristics only. One reason for this is to see how stable these coefficients are once we include location characteristics into the model. Additionally, we can get a sense of how changing the place of residence is correlated with getting the first job. Of course, moving from one neighbourhood to another is a form of self-selection or sorting into certain locations. The risk is that such behaviour may distort our results if high ability individuals (i.e. those with a high probability of getting a job) tend to move into enclaves with certain characteristics that we then misinterpret as enclave effects influencing the probability of its inhabitants on successfully finding jobs.

We first estimate a model including only individual-level variables except the two related to moving (*Moved last year* and *Moved at least once*, see model 1). Being female reduces the chance of getting a job, being in working age increases it. Age itself is positively related (at a decreasing rate) to the probability of getting a job. Belonging to a family with children reduces the probability of getting a job while being a single parent with children increases it. So far, all the coefficients have come out as expected. Next, we estimate a model with only the two variables related to moving (model 2). Both are positive and significant. Such finding means that moving somehow increases the immigrant's probability of getting employment. However, once we include all variables at the individual level, the estimated coefficients on moving decrease in size and become insignificant (model 3). The parameter estimates of the other individual-level variables are

very similar compared to model 1. To the extent possible in this setting, we argue that including the variables on moving in all further estimations controls (at least partly) for the potential bias due to sorting by unobserved individual characteristics. Furthermore, we will revisit to this issue later, and will provide additional results by splitting the sample into individuals who have changed their place of residence before finding their first job, and those who did not move before getting integrated into the labour market.

We now turn to include the location characteristics into the estimations. We do this also in a stepwise manner. First, we include more general neighbourhood characteristics, namely the neighbourhood population and the distance to the municipality CBD (model 4). Both of these variables turn out insignificant in explaining an immigrant's probability of getting a first job. Next, we include the overall employment rate (model 5), and its coefficient turns out to be positive and highly significant. We interpret this result as the first evidence that it is not the (population) size, but the quality of the location that is important. In the following, we include the two main variables of interest, namely the population share and the employment rate of the immigrant group. When including the share of the population belonging to the immigrant group alone the estimated parameter turns out to be significantly positive (model 6). Lastly, including both of them shows that both respective parameter estimates are positive and highly significant (model 7). In sum, we have found three neighbourhood variables that seem important in explaining the probability that immigrants get a first job, namely the overall employment rate, the share of the respective immigrant group over all residents (enclave size), as well as the employment rate of the own immigrant group (enclave quality). Note that including neighbourhood characteristics in models 4-7 hardly affects the parameter estimates of the individual characteristics, as reported in column 3 of table 2. Next, in table 3 we turn to other estimation techniques as alternative ways to account for a potential estimation bias due to sorting by unobserved characteristics and analyse the two immigrant groups separately.

**Table 2: Building the model –probability of getting the first job**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<b>LOCATION CHARACTERISTICS</b>							
Population	-	-	-	0.0154 (0.0271)	0.0337 (0.0284)	0.0264 (0.0281)	0.00770 (0.0283)
Employment rate (overall)	-	-	-		0.00581*** (0.00213)	0.0111*** (0.00265)	0.00796*** (0.00272)
Share immigrant group	-	-	-			0.00639*** (0.00182)	0.00747*** (0.00184)
Employment rate (immigrant group)	-	-	-				0.00715*** (0.00172)
Distance to Municipality CBD	-	-	-	-0.0115 (0.0276)	0.00422 (0.0281)	-0.00511 (0.0284)	0.00373 (0.0284)
<b>INDIVIDUAL CHARACTERISTICS</b>							
Moved last year	-	0.0954** (0.0486)	0.00304 (0.0502)	0.0118 (0.0506)	0.00907 (0.0505)	0.00969 (0.0505)	0.00704 (0.0506)
Moved at least once	-	0.0891** (0.0431)	0.0647 (0.0469)	0.0572 (0.0471)	0.0607 (0.0471)	0.0656 (0.0471)	0.0661 (0.0471)
Female	-0.808*** (0.0308)	-	-0.803*** (0.0309)	-0.812*** (0.0311)	-0.813*** (0.0311)	-0.814*** (0.0311)	-0.819*** (0.0311)
Working age	1.647*** (0.459)	-	1.652*** (0.460)	1.649*** (0.460)	1.648*** (0.460)	1.652*** (0.460)	1.640*** (0.460)
Age	0.0594*** (0.00903)	-	0.0594*** (0.00903)	0.0581*** (0.00907)	0.0581*** (0.00907)	0.0583*** (0.00907)	0.0586*** (0.00909)
Age squared	-	-	-	-	-	-	-
	0.00151*** (0.000122)		0.00151*** (0.000122)	0.00149*** (0.000122)	0.00149*** (0.000122)	0.00150*** (0.000122)	0.00150*** (0.000123)
Family with children	-0.0706** (0.0318)	-	-0.0692** (0.0318)	-0.0652** (0.0320)	-0.0647** (0.0320)	-0.0667** (0.0320)	-0.0654** (0.0320)
Single parent with children	0.129* (0.0661)	-	0.126* (0.0661)	0.129* (0.0663)	0.133** (0.0663)	0.133** (0.0664)	0.135** (0.0664)
Constant	-3.309*** (0.484)	- 1.839*** (0.139)	-3.319*** (0.484)	-3.406*** (0.523)	-3.944*** (0.566)	-4.246*** (0.575)	-3.965*** (0.577)
Education dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrival year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	44,230	44,230	44,230	43,782	43,782	43,782	43,782
Number of individuals	10534	10534	10534	10483	10483	10483	10483
Location characteristics	(t-1)	(t-1)	(t-1)	(t-1)	(t-1)	(t-1)	(t-1)
Log-likelihood	-16004	-17442	-16003	-15844	-15840	-15834	-15824
Pseudo R-squared	0.146	0.0692	0.146	0.147	0.147	0.147	0.148

Robust standard errors in parentheses (clustered at the individual level), \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The last model estimated in table 2 is repeated in table 3 (model 7), as we take this to be our baseline results against which we compare other specifications to. Our baseline specification is estimated for immigrants from both ethnic groups and includes all the explanatory variables measured in the year before we record the outcome variable. In the second specification (model 8), we use the same set of explanatory variables, but use the

neighbourhood characteristics of the immigrant's first place of residence in the year of arrival to Sweden. It can be argued that, for instance, employment in the immigrant group on the year of arrival is more exogenous. This does not mean that we can be sure that the initial location is entirely exogenous. But for the subset of Balkan refugees, a random placement policy that allocated immigrants to municipalities was still in place.<sup>1</sup> In model 9, the location characteristics given at (t-1) are instrumented by the respective values at the year of arrival (t0). Model 10 and 11 use the same specification as model 7, but the observations are split into the two ethnic groups (Balkan and the Middle East), and they are analyzed separately.

As before, we have two sets of explanatory variables. The first group describes the character of the location or neighbourhood, and the second set consists of the individual level variables. The focus of the analysis is put on the location characteristics. In all four specifications, the size of the location in terms of population is not significant.

The share of the population consisting of the relevant ethnic group is positively related to the probability of finding the first job when analysing both immigrant groups together, both when using the neighbourhood characteristics of the previous year and initial location conditions. However, the coefficient using initial conditions is smaller. When we divide the observations into the two ethnic groups, we get heterogeneous results: For people originating from the Middle East the size of the own ethnic groups has a significant positive effect, while the parameter estimate for immigrants from the Balkans is negative, though not significantly different from zero.

The general employment rate in the location only come out significant when analysing the two groups together and using previous years observations. The employment rate of the relevant immigrant group is significantly positive in all specifications. Such finding means that the higher the share of your own group that is employed the higher is the probability that you will get your first job. For the people coming from the Middle East, their own ethnic group has an effect through its size and its employment rate. For the Balkans only the second effect is present.

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<sup>1</sup> According to official legislation the policy of assigning a dwelling place to newly arrived refugees in pre-determined municipalities was in effect during the period 1985-1994. From 1994 the refugees had the opportunity to choose municipality if they themselves could find accommodation there. (Edin, et. al. 2004)



In no specification is the distance to the CBD significant. So, the probability of finding the first job is not influenced by the centrality of your place of residence. The individual-level variables are mainly treated as controls in this analysis. Some of the results are worth mentioning though. Throughout all specification probabilities of finding the first job is lower for females. This penalty is especially strong for women from the Middle East. The next variable is working age. It is a dummy variable taking on the value 1 if the person is below retirement age. Normal retirement age in Sweden is 65 years of age. For the combined observations, the coefficient is positive and significant for both previous year and its initial value. When splitting the observation into the two ethnic groups, we see that all of the effects seem to come from people from the Middle East for whom it is very significant. For people from the Balkans, there is no significant effect. Turning to actual age, there is a positive effect but at a decreasing rate since the linear part is positive and the quadratic part is negative. This finding is true for all specifications except the linear part for people from the Middle East. Comparing with the result for retirement age suggests that there is interaction going on between the dummy for retirement age and actual age.

Next, we turn to the family conditions in terms of living with a spouse and whether the individual has children below the age of 18. Overall living in a family and having children has a negative effect on the probability to get the first job. However, when we look at the different ethnic groups, we see that the signs are opposite and both statistically significant. For people from the Balkans the effect is positive and significant, and for people from the Middle East, the effect is negative and significant. Having children but being a single parent has a positive effect on the probability of finding the first job. This may be interpreted as a “push” effect. This effect is not present for people originating from the Middle East. For people coming from the Balkans, the effect is significantly positive.

As before, a number of dummy variables are used as controls: We include municipality and year fixed effects, dummy variables indicating the immigrant’s year of arrival to Sweden, as well as a set of dummy variables denoting the highest educational attainment.

The main results can be summarised as follows: The strength of the enclave effect depends essentially on the labour market success of the people living in the enclave. Moreover, the most robust effect comes from the employment share of the own immigrant group. This effect is positive and significant through all of the specifications so far.

**Table 3: Probability of getting the first job – Estimation variants, and comparing immigrants from the Balkans and the Middle East**

	Model 7	Model 8	Model 9	Model 10	Model 11
<b>LOCATION CHARACTERISTICS</b>					
Population	0.00770 (0.02826)	-0.00579 (0.02519)	-0.01749 (0.03267)	-0.02146 (0.06178)	0.02144 (0.03275)
Employment rate (overall)	0.00796*** (0.00272)	0.00194 (0.00280)	0.00055 (0.00321)	-0.00116 (0.00435)	0.00646 (0.00446)
Share immigrant group	0.00747*** (0.00184)	0.00375** (0.00183)	0.00354* (0.00191)	-0.02924 (0.02213)	0.00669*** (0.00235)
Employment rate (immigrant group)	0.00715*** (0.00172)	0.00511*** (0.00198)	0.00634** (0.00266)	0.00488** (0.00221)	0.00647** (0.00299)
Distance to municipality CBD	0.00373 (0.02837)	-0.00153 (0.02187)	-0.01416 (0.03295)	-0.05184 (0.05355)	0.01074 (0.03408)
<b>INDIVIDUAL CHARACTERISTICS</b>					
Moved last year	0.00704 (0.05056)	0.01279 (0.05057)	0.00631 (0.02830)	0.05616 (0.09311)	-0.01824 (0.06063)
Moved at least once	0.06609 (0.04713)	0.05477 (0.04710)	0.03053 (0.02596)	-0.05660 (0.09116)	0.11128* (0.05684)
Female	-0.81859*** (0.03114)	-0.81572*** (0.03111)	-0.45219*** (0.01741)	-0.33315*** (0.06223)	-0.97828*** (0.03650)
Working age	1.63962*** (0.45996)	1.64665*** (0.45978)	0.35536** (0.16145)	0.19374 (0.53365)	3.15303*** (1.00947)
Age	0.05864*** (0.00909)	0.05862*** (0.00908)	0.02756*** (0.00499)	0.15618*** (0.01969)	0.01473 (0.01042)
Age squared	-0.00150*** (0.00012)	-0.00150*** (0.00012)	-0.00075*** (0.00007)	-0.00281*** (0.00026)	-0.00090*** (0.00014)
Family with children	-0.06539** (0.03202)	-0.06533** (0.03205)	-0.04609** (0.01814)	0.20886*** (0.07124)	-0.16821*** (0.03672)
Single parent with children	0.13508** (0.06637)	0.13186** (0.06627)	0.06838* (0.03736)	0.40817*** (0.13022)	-0.01038 (0.07887)
Constant	-3.96549*** (0.57706)	-3.43401*** (0.56600)	-1.19581*** (0.38863)	-3.54688*** (0.89538)	-5.04906*** (1.09684)
Education dummies	Yes	Yes	Yes	Yes	Yes
Arrival year dummies	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	43,782	43,816	43,767	13,277	29,944
Number of individuals	10483	10477	10477	2440	8043
Sample	Full sample	Full sample	Full sample	Balkan	Middle East
Method	Logit	Logit	IV Probit	Logit	Logit
Location characteristics	(t-1)	t0	(t-1)	(t-1)	(t-1)
Log-likelihood	-15824	-15836	-511230	-3977	-11672
Pseudo R-squared	0.148	0.147		0.237	0.118

Robust standard errors in parentheses (clustered at the individual level),\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: In model 8, location characteristics (i.e. population, share immigrant group, employment rate, employment rate immigrant group and distance to municipality CBD) are measured as initial values of the year of arrival (t0). In model 9 the location characteristics given at (t-1) are instrumented by the respective values at the year of arrival (t0).

Next, we check the robustness of results by adding incorporating a number of additional variables into our analysis that allows us to capture heterogeneity across different types of neighbourhoods and different groups of individuals. In reporting these results, we focus exclusively on the results from the enclave level. For this reason, and for the sake of saving space, we refrain from reporting the results from the individual level variables.

## 4.2 Sensitivity analysis

### *Effect of other immigrant groups*

In this section, our aim is to evaluate whether our results regarding the own immigrant group characteristics indeed stem from the immigrants' ethnic peers rather than from immigrants from other countries. In order to test this, we add two variables to our model, namely the share and the employment rate of other immigrants in the neighbourhood, i.e. of immigrants not originating from the Balkans or the Middle East, respectively. The results of this exercise are presented in table 4 below. For the two first models, the share and the employment rate of the own immigrant group and the employment rate of immigrants with other origins are positively and significantly related to our measure of labour market integration. So, for these two models, there seem to be interference or spillover effects between the different groups. For the rest of the estimations presented in Table 4, these cross-immigrant group effects are not significantly different from zero, despite a positive parameter estimate. For the model estimated using instrumented variables and for the specifications restricting the sample to immigrants from the Balkans, the only significant neighbourhood variable is the employment rate of the own group. For immigrants from the Middle East, both the size and the quality of the enclave seems to influence labour market integration positively.

Note that including neighbourhood information on immigrants from other countries hardly influences the estimated parameter on the employment rate of the own immigrant group. This finding can be interpreted as support for the notion that it is the quality as perceived by each group of immigrants that is essential for the probability of finding the first job.

**Table 4: Probability of getting the first job – interference between groups**

	Model 12	Model 13	Model 14	Model 15	Model 16
<b>LOCATION CHARACTERISTICS</b>					
Population	0.00048 (0.02850)	-0.01220 (0.02549)	-0.02410 (0.03379)	-0.02943 (0.06069)	0.01408 (0.03336)
Employment rate (overall)	0.00362 (0.00406)	-0.00245 (0.00396)	-0.00344 (0.00482)	-0.00387 (0.00708)	0.00208 (0.00571)
Share immigrant group	0.00728*** (0.00188)	0.00319* (0.00185)	0.00323 (0.00197)	-0.03409 (0.02386)	0.00665*** (0.00235)
Employment rate (immigrant group)	0.00709*** (0.00173)	0.00515*** (0.00199)	0.00641** (0.00266)	0.00459** (0.00222)	0.00690** (0.00301)
Share other immigrants	0.00139 (0.00157)	0.00084 (0.00152)	0.00131 (0.00157)	0.00211 (0.00258)	0.00088 (0.00225)
Employment rate (other immigrants)	0.00787** (0.00353)	0.00657** (0.00323)	0.00716 (0.00454)	0.00674 (0.00668)	0.00718 (0.00455)
Distance to municipality CBD	-0.00814 (0.02876)	-0.00556 (0.02231)	-0.02456 (0.03392)	-0.06303 (0.05446)	-0.00219 (0.03450)
Individual characteristics	Yes	Yes	Yes	Yes	Yes
Education dummies	Yes	Yes	Yes	Yes	Yes
Arrival year dummies	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	43,773	43,807	43,758	13,276	29,936
Number of individuals	10480	10474	10474	2439	8041
Sample	Full sample	Full sample	Full sample	Balkan	Middle East
Method	Logit	Logit	IV Probit	Logit	Logit
Location characteristics	(t-1)	t0	(t-1)	(t-1)	(t-1)
Log-likelihood	-15815	-15827	-779653	-3973	-11667
Pseudo R-squared	0.148	0.147		0.238	0.118

Robust standard errors in parentheses (clustered at the individual level),\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: In model 13, location characteristics (i.e. population, share immigrant group, employment rate, employment rate immigrant group and distance to municipality CBD) are measured as initial values of year of arrival (t0). In model 14 the location characteristics given at (t-1) are instrumented by the respective values at the year of arrival (t0).

### *Heterogeneous effects for different types of neighbourhood*

In this sensitivity analysis, we investigate whether our results are robust if we split the sample along neighbourhood characteristics. We thus differentiate enclaves in two dimensions, namely on population density and the share of the foreign population. Note that since we use one square kilometre squares as enclave's density is the same thing as size in terms of population. First, we compare the results between high- and low-density enclaves (or small and large enclaves in terms of population).

Regression results, reported in table 5, show that neighbourhoods with high population density three variables on location characteristics are highly significant. These are the overall employment rate, the share of the population of the own immigrant group and the employment rate of the own immigrant group. For less densely populated regions parameter estimates are generally less significant — only the share of people from the own immigrant group and their employment rate matter. The results confirm the finding from previous model specifications that the own immigrant group matters most.

**Table 5: Probability of getting a first job in different types of neighbourhoods**

	Model 17	Model 18	Model 19	Model 20
<b>LOCATION CHARACTERISTICS</b>				
Population	0.02377 (0.05671)	0.03911 (0.05472)	0.00907 (0.04404)	-0.00334 (0.03793)
Employment rate (overall)	0.01153*** (0.00353)	0.00316 (0.00518)	0.01378** (0.00632)	0.00216 (0.00365)
Share immigrant group	0.00862*** (0.00232)	0.00864** (0.00406)	0.01148*** (0.00318)	0.00434 (0.00659)
Employment rate (immigrant group)	0.00833*** (0.00249)	0.00467* (0.00251)	0.01290*** (0.00469)	0.00488*** (0.00189)
Distance to municipality CBD	0.06870 (0.04182)	-0.02657 (0.04388)	-0.02971 (0.09532)	-0.01280 (0.03166)
Individual characteristics	Yes	Yes	Yes	Yes
Education dummies	Yes	Yes	Yes	Yes
Arrival year dummies	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	34,268	8,413	23,564	20,211
Number of individuals	8814	3351	6378	6249
Sample	Pop dens >= 2000 inhabitants / km <sup>2</sup>	Pop dens < 2000 inhabitants / km <sup>2</sup>	Share foreign >= 40%	Share foreign < 40%
Log-likelihood	-12179	-3591	-8229	-7537
Pseudo R-squared	0.152	0.0992	0.149	0.152

Robust standard errors in parentheses (clustered at the individual level),\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

To allow for heterogeneous effects in more and less segregated areas we split the sample into enclaves with more than 40 per cent of the residents born abroad, and in neighbourhoods with less foreigners. We find positive parameter estimates for the overall employment rate and the share of the population of the own immigrant group in both samples, but the coefficients are only significantly different from zero in more segregated areas. The employment rate in the own immigrant group, however, is significantly positive in both samples. Somewhat surprisingly the distance to the municipality CBD is weakly significant and negative. This means that for these neighbourhoods it is to some extent important to be centrally located.

#### *Heterogeneous effects for different groups of individuals*

In this last sensitivity analysis, we allow for heterogeneous effects for different individuals and split our sample along individual characteristics. We focus again on the issue of movement. In addition, we investigate individuals with different educational attainments separately and, lastly, we use a more restrictive wage threshold to assess whether an immigrant is successfully integrated into the labour market.

We first divide the population into those who changed their place of residence at least once before finding the first job (“movers”) and those who did not (“stayers”). Starting with the movers (model 21) the significant variables are once again overall

employment rate, the share of the population belonging to the own immigrants' groups and employment rate in that group. The variable with the highest significance level is the employment rate in the own group. For the group that never moved (model 22) results are generally weaker. For the first time, the variable for enclave size (population) is weakly negatively significant, and the overall employment rate does not matter. The share of the immigrant group is significant, and the size of the coefficient is comparable to the movers. The employment rate of the immigrant group is weakly significant, but the size of the coefficient is only about half the size compared to the respective parameter estimates for the movers.

Second, we divide the immigrants into three different educational groups (low, medium and high, see models 23 - 25). The overall employment rate and the share of the immigrant group in the population have similar effects for all educational groups. For the employment rate in the own immigrant group, we find positive coefficients for all three groups, but the estimated parameter is not significantly different from zero for the low education group. For the medium education group, the effect seems strong and highly significant, but the parameter estimate for the high education group is considerably smaller and only weakly significant. These results suggest that the middle group is the one that benefits most from the co-nationals' labour market success.

We, finally, apply a more restrictive wage threshold: Immigrants are considered unemployed until they find a job with a gross annual income of at least 156,000 Swedish crowns (about 15,000 Euro). Using this wage threshold to assess successful labour market integration (model 26) the results suggest that the size of the neighbourhood matters and that living in a larger neighbourhood is beneficial. While the overall employment rate does not seem to be important, we find a significantly positive coefficient for both the share and the employment rate of the same immigrant group.

**Table 6: Different groups of individuals - Probability of getting the first job**

	Model 21	Model 22	Model 23	Model 24	Model 25	Model 26
<b>LOCATION CHARACTERISTICS</b>						
Population	0.01344 (0.04608)	-0.07285* (0.04285)	-0.00277 (0.07153)	0.02848 (0.05778)	-0.02587 (0.04519)	0.07292** (0.02852)
Employment rate (overall)	0.00952** (0.00419)	0.00579 (0.00436)	0.01630** (0.00732)	0.01274** (0.00496)	0.00777* (0.00462)	-0.00336 (0.00295)
Share immigrant group	0.00565** (0.00285)	0.00553** (0.00273)	0.01118** (0.00438)	0.00787** (0.00401)	0.00843*** (0.00313)	0.00473** (0.00193)
Employment rate (immigrant group)	0.00882*** (0.00264)	0.00437* (0.00255)	0.00327 (0.00462)	0.00803*** (0.00304)	0.00548* (0.00288)	0.02237*** (0.00149)
Distance to Municipality CBD	-0.05843 (0.04753)	0.02033 (0.04017)	0.02201 (0.06786)	0.09666* (0.05516)	-0.03636 (0.04862)	0.03121 (0.02711)
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Education dummies	Yes	Yes	Yes	Yes	Yes	Yes
Arrival year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,821	15,766	9,554	8,643	11,792	62,396
Number of individuals	4826	5347	2439	2567	3351	11783
Group characteristics	Changed place of residence before finding first job	Did not change place of residence before finding first job	Low education	Medium education	High education	Landed a "high wage" job
Log-likelihood	-6246	-7307	-3194	-3927	-5144	-16523
Pseudo R-squared	0.170	0.184	0.162	0.100	0.0768	0.107

Robust standard errors in parentheses (clustered at the individual level),\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5 Conclusion

Since the great surge of refugee immigrants to Europe in the fall of 2015 the first topic of the public debate has been focused on immigrant integration. The most important form of integration is widely seen as entering the labour market. Policymakers thus focus on different schemes involving language training, education and labour market interventions.

In this paper analyse how ethnic enclave quality can explain the probability that an immigrant finds a job within the next year. It is well known that immigrants living in an ethnic enclave inhabited by co-nationals are influenced by their neighbours. Using a variety of model specifications, we show that the probability that an immigrant finds a job is related to enclave quality and – to a weaker and less robust extent – to enclave size. In this study, neighbourhoods are defined as exogenously given geographical areas in the form of grid cells of one square kilometre. The use of exogenously determined identically sized squares puts limits on some of the cross-enclave variation in different dimensions.

Note that in this setting scale (size, population) and density (people per square kilometre) are interchangeable, as both types of variables measured as per square-kilometre.

In our empirical model neighbourhoods have been characterised by population, immigrant population (by groups), and distance to the nearest CBD. Enclave quality is measured by the overall employment rate and by the employment rate of the relevant immigrant group. While controlling for many individual characteristics, the most robust result is that the employment rate of the immigrant group is a decisive factor in explaining the likelihood of finding a first job. The population share of co-nationals also plays a positive role, but this result is less robust. We contribute to the existing literature by emphasising on enclave quality in addition to enclave size. Additionally, using two distinct immigrant groups allows us to infer on the size and importance of enclave effects across different immigrant groups. Our results suggest that enclave quality is more important than enclave size.



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