

Rauhut, Daniel; Johansson, Mats

**Conference Paper**

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50th Congress of the European Regional Science Association: "Sustainable Regional Growth and Development in the Creative Knowledge Economy", 19-23 August 2010, Jönköping, Sweden

**Provided in Cooperation with:**

European Regional Science Association (ERSA)

*Suggested Citation:* Rauhut, Daniel; Johansson, Mats (2010) : The regional settlement patterns of Immigrants to Sweden 1967-2005 by gender, 50th Congress of the European Regional Science Association: "Sustainable Regional Growth and Development in the Creative Knowledge Economy", 19-23 August 2010, Jönköping, Sweden, European Regional Science Association (ERSA), Louvain-la-Neuve

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# THE REGIONAL SETTLEMENT PATTERNS OF IMMIGRANTS TO SWEDEN 1967-2005 BY GENDER

Daniel Rauhut and Mats Johansson,  
Royal Institute of Technology (KTH),  
Division of Urban and Regional Studies  
Stockholm, Sweden

## Abstract

The aim of this study is to analyse the initial allocation of immigrants to Sweden 1967-2005 by gender in a regional perspective. Vacancies, unemployment and labour market participation as well as geographical areas with many previous immigrants are included in the analysis as pull-factors.

A multivariate cross-section OLS regression model will be used to estimate the relative initial regional distribution of immigrants in Sweden in 1967, 1975, 1990 and 2005 by gender. The chosen method enables to control for a subset of explanatory variables and examine the effect of a selected independent variable when estimating the regional pull-factors to immigration. This study uses data collected from Statistics Sweden (SCB) and the National Labour Market Board (AMS). The data used is regional macro data, which does not contain information on single individuals.

## Introduction and background

Until the end of 1960s, Swedish industry was in need of labour, and most labour immigrants were recruited to small to medium scale manufacturing industries in The Swedish rust belt *Bergslagen* (Värmland, Dalarna, Gävleborg, Örebro and Västmanland counties), to towns in Västra Götalands county (Borås, Trollhättan, Göteborg) and the Stockholm county (Johansson and Rauhut 2008:43, SCB 2004:21). The period between 1970 and 1985 can also be seen as a transition phase from labour immigration to refugee and family immigration. Since the mid-1980s until the early years of this millennium immigration to Sweden has been dominated by refugee immigrants and tied-movers (Lund and Ohlsson 1994:23, SCB 2004:24-25).

The settlement patterns of the foreign-born population have changed considerably since the 1960s and 1970s, partly as an effect of the structural transformation of the Swedish economy from an industrial to a post-industrial society, partly as a consequence of the transition from labour immigration to refugee immigration. While many labour market immigrants during the 1950s, 1960s and the first half of the 1970s settled down in industrial towns or communities as a result of the demand of blue-collar workers, the refugees after the 1970s and 1980s became more concentrated to the metropolitan areas – the Stockholm, Göteborg and Malmö regions – and very unwilling to leave these areas (Andersson 2003, Johansson and Rauhut 2008:40).

An attempt to spread refugees more evenly over the country was launched in 1985 with the implementation of *Hela Sverige-strategin* (“countrywide strategy for refugee reception”). The new strategy further stated that a refugee no longer could settle down where he/she wanted to live, which was an attempt to limit the concentration to the metropolitan areas. From 1985 to 1994, in line with this countrywide strategy, the majority of the refugee immigrants were more than before dispersed across Sweden (Andersson 2003, SCB 2006:25, Johansson and Rauhut 2008). The idea was, thus, to place the refugees in refugee centres all over Sweden in an attempt to prevent refugees to cluster in the three metropolitan regions, and to some extent this strategy was successful (SCB 2006, Johansson and Rauhut 2008:53).<sup>1</sup> The countrywide strategy was partially

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<sup>1</sup> When the refugees received their residence permit they were free to move anywhere in the country, which meant that they moved to the metropolitan regions. An implication of this is that the refugees are registered as immigrants in the county of the refugee centre and their move to the metropolitan areas, after they have received their residence permit, is classified as domestic migration. In 1994 this strategy was revised. If the refugees can arrange housing and accommodation while waiting for their residence permit, they can settle down in any region, which, in reality, means in the metropolitan regions. Since refugees have constituted a significant group of immigrants this settlement strategy for refugees has influenced the initial regional settlement patterns of immigrants (Johansson and Rauhut 2008:40). The strategy “*Hela Sverige*” induces, at least theoretically, an institutional bias to the analysis for 1990 as factors such as vacancies, unemployment and employment will have little effect on the settlement pattern for a significant group of immigrants.

abandoned in 1994 as an evaluation showed that, although the policy was successful in spreading people initially over the country, secondary migration tended to concentrate people again over the years (Andersson 2003). Since 1994, refugees are allowed to arrange for their own living and housing and 2005 only 30 percent of new immigrants are involved in the original countrywide placement strategy (SCB 2006:25-26).

In an analysis of the development of the coefficient of variation (C.V.), that can be seen as an indicator for the settlement diffusion, Johansson and Rauhut (2008:48) show that the accumulated number of foreign born persons (stock) in the Swedish regions, likewise the number of immigrants (flow), has become more evenly distributed during the period 1950-2005 (see table 1). The lower coefficients of variation are, the more even is the diffusion of immigrants.

**Table 1** Coefficient of Variation (C.V.) for the stock and flow of immigrants to Sweden 1950-2005 for all regions (N=21) and non-metropolitan regions (N=18). *Source: Johansson & Rauhut 2008a:48*

	Stock of immigrants		Flow of immigrants	
	C.V. (N=21)	C.V. (N=18)	C.V. (N=21)	C.V. (N=18)
1950	0,600	0,636	0,869	0,946
1967	0,600	0,540	0,492	0,435
1975	0,563	0,558	0,526	0,548
1990	0,416	0,359	0,249	0,257
2005	0,370	0,314	0,285	0,196

In Sweden, the decisions for *secondary moves* of immigrants, *i.e.* the geographical mobility after the *initial* settlement have been analysed in a number of studies for refugees, tied movers and labour immigrants (e.g. Edin *et al.* 2003, 2004, Åslund 2000, 2005, Åslund and Rooth 2007, SCB 2006, Andersson 2004, Ekberg 1993, Ekberg and Andersson 1995, Repmann and Vencatasawmy 2002, SCB 2006, 2008). Only a few studies have, however, focused on the initial settlements. Wadensjö (1973:424) finds that the determinant for immigrants' initial settlement decision in the 1960s was vacancies and labour market conditions in general. In an analysis of the immigrants' settlement patterns in 1967, 1975, 1990 and 2005 by Rauhut and Johansson (2008:24) vacancies did impact the choice of settlement for immigrants in Sweden in 1967, but not for the other years.

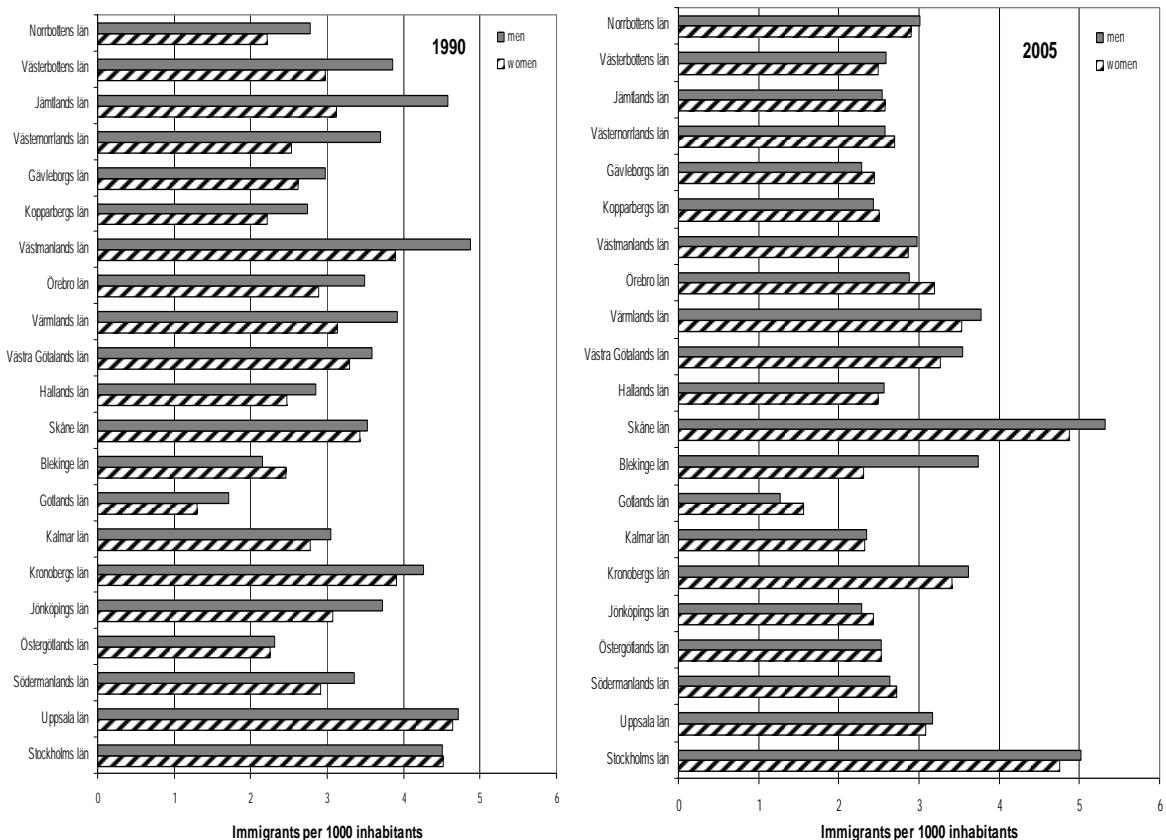
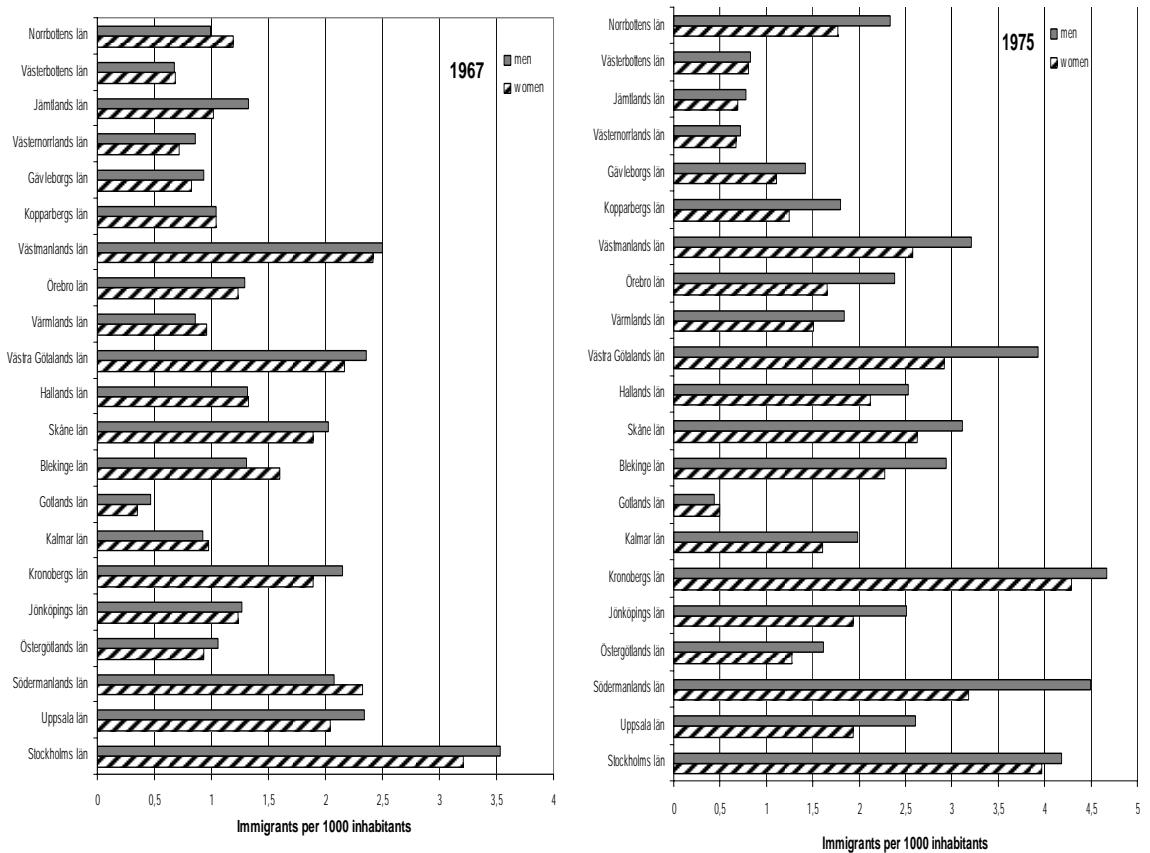
According to Johansson and Rauhut (2008:43-47) the three metropolitan regions have always attracted a majority of all immigrants, but the distribution of immigrants between the remaining

counties in Sweden has become more even between 1950 and 2005. Johansson and Rauhut (2008:50-53) find no evidence that labour immigrants and refugees have different settlement patterns and react in different ways with regard to the labour market variables. Instead, the impact of these variables decreases over time. The traditional industrial regions were overrepresented among the immigrants up to the middle of the 1970s. The transformation of the economy with deindustrialisation and the rise of the knowledge-based economy have reduced the importance of the labour market variables for all kind of immigrants concerning the settlement pattern. Instead, the most important pull-factor has been and still is the regional distribution of foreign-born people. The stock of foreign-born persons was also found the most and only important factor for the regional initial settlement patterns for 10 immigrant groups 1975-2005 in the study by Rauhut and Johansson (2010).

At a regional level, the differences in initial settlement patterns by gender are marked, not only in a regional perspective but also over time (see figure 1). This is an aspect in the Swedish immigration history that has not yet been fully explored. From other studies at world level it seems obvious that women have more and more dominated migration to the developed countries and this is especially concerning labour migration even if it is not the most attractive jobs that are the destination for the female migrants. Men coming from the developing world – often refugees – seem to have more difficulties to get a foothold on the labour market (Zlotnik 2005).

### **The aim of the paper**

This study aims at analysing what possible pull-factors have determined the initial regional settlement pattern of immigrants by gender to Sweden 1967-2005. Vacancies, unemployment and labour market participation as well as the geographical areas with many previous immigrants are included in the analysis as pull-factors. This study proposes to answer the following two questions: (1) which factors have had impact on the initial regional settlement pattern of immigrants by gender? (2) Have the determining factors changed over time for the studied immigrants of different genders?



**Figure 1** The number of immigrants per 1000 inhabitants by gender and region 1967-2005. Source: Own calculations from SOS Befolkningsförändringar del 3, SOS Befolkningsstatistik and SOS Folkmängd del 3.

## Regional labour demand and immigration: Theoretical approaches

The theoretical considerations in this paper take its point of departure in the *neo-classical theory of migration*. Expansive regions with a larger demand for labour than actually can be met regionally or nationally will stimulate migration; in these regions job prospects are good and the wages in the modern and expanding sector are higher than in other sectors. In short, labour will be transferred from an economically less developed sectors to modern industrialised and knowledge-based ones (Fisher and Straubhaar 1996:64-74). When the labour demand in the expanding regions has been met, wages will be relatively lower, and unemployment relatively higher in these regions. As a result, the demand for labour will subside. Wage differentials and differences in unemployment between two regions are both push and pull factors for migration (Massey *et al.* 1993:433-434). The big difference between expanding and retarding regions is instead the employment size – in the expanding regions where the increased demand resulted in a transfer of people from the retarding regions, the amount of jobs and workers are larger than before while the contrary is the case in the retarding regions (e.g. McCann 2005:192-193). Even these development paths are in line with the neo-classical theory even if the outcome will be a divergent development and even polarisation between differing regions as a consequence of external or internal factors or chocks. A new equilibrium is reached but the attractiveness of the regions is quite different after than before the transformation process. This means also that the push and pull-factors will be quite different as “big is beautiful” often is one central ingredient among the migration motives that are associated with jobs, flexibility and urban life styles.

This kinds of reasoning has been developed in *human capital based economic theory* where individuals are assumed to undertake long term calculations where migration can be seen analogical with an investment in future wellbeing. The idea that the migrant is perfectly rational from the point of view and this is also a central ingredient in human capital based migration theory. The decision on both when and where to move includes then variables such as wage differentials, unemployment rates, travel costs, the ability to move, barriers and the psychological aspects of leaving friends and family etc. (Sjaastad 1962, Liu 1975, Todaro 1969, 1976, 1989, Schoorl 1995). Individual characteristics (e.g. education, experience, training, language skills) produce different outcomes regarding both the decision to migrate, and where to migrate and the time dimension is also a central ingredient as the outcome may differ between short and long term. One central assumption is that the migrant is rational – at least *ex ante* (Todaro 1969, 1976, 1989, Harris and

Todaro, 1970). It must be kept in mind that this kind of reasoning is applicable of a free labour force and not on immigrants without residence or job permits. Thus, even if the explanatory power is less for the latter category the motives behind the migration decisions are rational from the migrant's point of view – otherwise there would be no migration.

In the neoclassical migration theory regional vacancy ratios, regional unemployment rates are often used as indicators to measure possible pull-factors for the migration to Sweden 1975-2005. Other factors that can be used are distance and the size of people living in the cities or regions. As mentioned above the above mentioned factors are more relevant for Swedes and people from the EU than for refugees as they are often in a situation dominated by restrictions and other hindrances. The latter seems to be of utmost importance for immigrants outside the Nordic countries or the EU as they prefer to move to places where they suppose to have the best chances to get a job on formal or informal ways. As the migrant is supposed to be rational this is a process that accentuates the concentration process and the skewed distribution of the immigrants in the second round even if the unemployment levels in these categories are very high. This type of migratory movements are predominantly oriented to special districts in the metropolitan areas and is not contradictory to the above mentioned observation that the distribution of immigrants are more evenly distributed between the counties today compared to some decades ago.

The neo-classical theory of migration cannot, however, explain the continuation of migration to certain districts in the big cities or metropolitan areas as a consequence of traditional pull-factors as job opportunities or vacancies, especially not after the initial demand for labour has subsided. The second point of departure for the theoretical framework used in this study is the *Network theory* of migration. Moving from point A to point B is connected with risks and costs. Networks and connections is a kind of social capital with people who are already staying/living/working in point B which will make it easier to make a living in point B (Boyd 1989:661, Schoorl 1995:5-6). “Once the number of migrants reaches a critical threshold, the expansion of networks reduces the costs and risks of movement, which causes the probability of migration to rise, which causes additional movement, which further expands the networks, and so on” (Massey *et al.* 1993:448-449). Migration networks as social and personal contacts can, however, overcome restrictions in admission policies. A common strategy for overcoming admission (and settlement) policies is through marriages between network members, another is the importance of close relatives (Schoorl 1995:5).

Although the existence of migration networks is very difficult to measure, which is pointed out by Schoorl (1995:6), a possible indicator for the presence of immigrant networks is the accumulated regional stock of foreign-born persons. It can be assumed that if networks exist between immigrants from one country and between immigrants in general in one geographical area, that particular geographical area will attract many immigrants. Hence, it can be assumed that if the accumulated regional stock of foreign-born persons is high so is the presence of immigrant networks, and vice versa, something that will attract new immigrants. Previous empirical studies indicate support for this (e.g. Åslund 2000).

In this study the *total* regional stock of immigrants will be used as a proxy variable for the existence of migration networks. It would have been desirable to use the regional stock of immigrants *by origin*, but the relevant data, unfortunately, does not exist for all years.

Leaving the economically motivated migration of workers, for whom the push-pull approach to migration is applicable, the movement of refugees is less voluntary. In many cases, however, economic and political forces may jointly trigger refugee movements and the degree of freedom of choice is highly relative. Governments may try to limit immigration by enforcing e.g. a new legislation to slow down or limit refugee immigration. Simultaneously, family union policies may counter-act these ambitions (Massey *et al.* 1993:50). In this study the strategy “*Hela Sverige*” will be used as an indicator for government action to control the immigration to and in Sweden 1985-1995. This can be seen as an institutional factor that hampers the free geographic mobility and also diminish the migrations propensities among the migrants – at least the refugees – as they are registered in the official statistics.

A third theoretical point of departure, is a synthesis of the *human capital theory* and the *segmented labour market theory* that appears to be able to explain the settlement pattern among the migrants, internal as well as the migratory movements among the immigrants. As mentioned earlier the migrant is rational from the supply side of view according to the human capital theory simultaneously as demand side consists of several differing segments. This situation results in several labour market segments with little mobility and substitution between these, but high mobility and substitution within them (Johansson 1996:71-73). In the post-industrial society, the production factors are more complementary compared to the industrial society where they more easily substitute each other.

The *dual or segmented labour market theory (SLM)* accentuates instead the intrinsic demand for labour in modern industrial societies that create a constant need for workers at the bottom of the social hierarchy. This has also been a central ingredient since the introduction of the SLM-theories in the beginning of the 1970s (see e.g. Doeringer and Piore 1971, Vietorisz and Harrison 1973, Piore 1979). The segmented labour market consists of a number of segments more or less separated from each other by various kinds of formal or informal barriers resulting in a heterogeneous and unsubstitutable labour force. It is a well-known fact that it is in the lower segments in particular that the new immigrants, often from developing countries, are most likely to be found in the “3D-jobs” – jobs that are dirty, dangerous and degrading, which the natives more or less refuse to take (Taran 2005).

Foreigners in these sectors are also more vulnerable to economic fluctuations and unemployment than national inhabitants. This seems, however, to be not merely a business cycle phenomenon – rather there has been a long-term rise in the share of unemployed foreigners compared to nationals in recent decades. It also seems that it is more difficult for foreigners to find a new job when better times come. Low-skilled, manual workers – often men – in declining sectors and branches seem to have little chance of being re-employed (OECD 2004). This development is also in line with the theories of segmented labour markets in the way that the structural changes accentuate the mismatch on the labour market and increase the discrepancy between shortages and surpluses with regard to the production factor of labour between differing labour market segments. The result will be that the labour market segmentation more and more also will be a segmentation based on ethnicity and reinforce the segregation problems in especially the metropolitan areas.

## **Hypotheses**

In line with the above mentioned theories the following hypotheses are generated:

1. Many vacancies in a region will attract both male and female immigrants,
2. High regional unemployment will repel both male and female immigrants,
3. High regional employment will attract both male and female immigrants.

Gender specific differences for these three hypotheses are more related to the economic structure and the demand for specific labour, not on vacancies, unemployment and employment *per se*.

Since immigration has continued long after the initial demand for labour subsided a hypothesis in line with the Network theory of migration is generated:

4. Previous migration flows to a region will generate more immigration. A gender specific impact on the initial settlement pattern will not be found.

These hypotheses so far apply to labour immigration, but not to a refugee immigration where the refugees are placed in refugee centres anywhere in the country; the choice of settlement is thereby determined by institutional factors. A fifth hypothesis is therefore

5. The institutional impact of the countrywide strategy for refugee reception – *Hela Sverige-strategin* – will not lead to a gender specific impact on the initial settlement pattern.

## **Data and method**

A multivariate cross-section OLS regression model will be used for estimating the relative regional distribution of immigrants in Sweden for the years 1967, 1975, 1990 and 2005. The method has been chosen because it enables us to control for a subset of explanatory variables and examine the effect of a selected independent variable when estimating the regional pull-factors to immigration. This study uses data collected from Statistics Sweden (SCB) and the National Labour Market Board (AMS). The data used is regional macro data, which means that we do not have any information on single individuals.

The dependent variable is the regional number of immigrants per 1000 inhabitants,  $F$ , by gender (female  $f$  and male  $m$ ) to Sweden in region  $i$ ,  $F(f)_i$  or  $F(m)_i$ , for year  $t$ . For the independent variables unemployment,  $U$ , and employment,  $E$ , the regional unemployment and employment rates are used. The regional vacancy ratio,  $V$ , is commonly defined by dividing the number of vacancies in region  $i$  with the number of persons in the labour force in region  $i$  for year  $t$ . The accumulated regional stock of immigrants per 1000 inhabitants,  $S$ , refers to the regional number of foreign citizens per 1000 inhabitants for 1975<sup>2</sup>, and for the regional number of foreign born persons per 1000 inhabitants in 1990 and 2005.

The heterogeneous data for  $S$  means that the results of the analysis for 1967 and 1975 are not fully comparable to the results obtained for 1990 and 2005. The independent variable for the accumulated stock of previous immigrants is also so highly correlated with the dependent

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<sup>2</sup> For 1967 and 1975 only data for foreign citizens exists; country of birth was not registered.

variable that a first order serial correlation for 1967 and 1975 is generated.<sup>3</sup> To control for this heterogeneity and the first order serial correlation we insert a dummy variable (Industrial regions) in the model for 1967 and 1975. The major industrial regions (Stockholm, Uppsala, Södermanland, Östergötland, Skåne, Västra Götaland, Örebro, Västmanland, Dalarna, Gävleborg and Norrbotten) are given the value 1, while all other regions have the value 0. Since it was the industry which demanded immigrant labour these regions ought to attract immigrants (Johansson & Rauhut 2008:43-45, Rauhut & Johansson 2010). Indirectly this dummy controls for the stock of immigrants including those who have become Swedish citizens.

The motives for migrating to Sweden differ depending on if the migrant is a labour immigrant, refugees or a returning Swedish citizen. Hence, it can be assumed that their motives for settling down in a specific region may differ. Since the labour market in Sweden is highly gender segregated it can be assumed that the motives for migrating to Sweden and where to settle down may differ between the different genders. In line with the theoretical reasoning above we have constructed four models. Models 1a and 1b specify the initial settlement patterns for 1967 and 1975. For females the model is specified as

$$\ln F(f)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 INDREG + \varepsilon \quad (1a)$$

and for males

$$\ln F(m)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 INDREG + \varepsilon \quad (1b)$$

Models 2a and 2b uses accumulated regional stock of immigrants per 1000 inhabitants,  $S$ , instead of the dummy variable INDREG. In 1990 and 2005 problems with first order serial correlation does not exist. For females the model is specified as

$$\ln F(f)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \varepsilon \quad (2a)$$

and for males

$$\ln F(m)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \varepsilon \quad (2b)$$

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<sup>3</sup> The accumulated stock of foreign born persons in the Swedish regions,  $S$ , should be added in the model, at least on theoretical reasons – former immigration tends to generate new immigration – and the variable should be lagged with  $t - n$  years. The problem is, however, that  $S$  as foreign citizens generates first order serial correlation 1967 and 1975. The main reason for this appeared to be that the independent variable  $S$  as foreign citizens is highly correlated to the dependent variable  $F$ , which results in e.g. inconsistent OLS-estimates, a larger  $R^2$  than the true value and the  $t$ -statistics will be overestimated (Ramanathan 1995:449-451). Several tests and actions have been taken to control for this serial correlation, but all failed. As a result,  $S$  has been excluded from the model 1967 and 1975.

In the late 1970s and early 1980s the number of refugees to Sweden increased and they settled down in the metropolitan regions around Stockholm, Göteborg and Malmö. As mentioned earlier, in 1985 a strategy for distributing refugees evenly all over Sweden was introduced (*Hela Sverige-strategin*). The idea was to prevent refugees to cluster in the three metropolitan regions and instead distribute them to refugee centres all over Sweden. This induces an institutional bias to the analysis for 1990 as factors such as vacancies, unemployment and employment will have little effect on the settlement pattern for a significant group of immigrants. To control for this institutional bias a dummy variable (Refugee centre) will be added to the model for 1990 and 2005. The dummy variable is 1 for the regions which hosted large refugee centres (Södermanland, Östergötland, Värmland, Örebro, Dalarna, Gävleborg, Västernorrland, Västerbotten and Norrbotten), for all other regions the value is 0. For women model 3a is specified as

$$\ln F(f)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \beta_5 \text{REFCENT} + \varepsilon \quad (3a)$$

and for men model 3b is specified as

$$\ln F(m)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \beta_5 \text{REFCENT} + \varepsilon \quad (3b)$$

The returning Swedish citizens differ from the other immigrants groups as they can be assumed to have ties to a specific region – the region they previously emigrated from. In recent years the group of returning natives amongst the immigrants has been very high – around 40 per cent of all immigrants to Sweden are returning natives (Rauhut 2007:19). As the e.g. headquarters for multinational Swedish companies, public authorities, several major universities (exchange of academic scholars and students) etc. are situated in the three metropolitan regions, we assume that the returning Swedish citizens prefer moving back to where they have their ties. Theoretically, a variable measuring the regional number of Swedish emigrants per 1000 inhabitants could be used as proxy variable. Unfortunately, the time spent abroad, before returning to Sweden, is unknown. Instead we add a dummy variable (big city) into the model to control for qualitative characteristic (the wish of returning to the region of origin) of this particular immigrant group. The regions Stockholm, Skåne and Västra Götaland are given the value 1, while all other regions are given the value 0. To estimate the effect of the returning Swedish citizens 1990 and 2005 the model 4a is specified for women as

$$\ln F(f)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \beta_5 \text{BIGCITY} + \varepsilon \quad (4a)$$

and for men model 4b as

$$\ln F(m)_{i,t} = \alpha_1 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln E_{i,t-1} + \beta_3 \ln V_{i,t-1} + \beta_4 \ln S_{i,t-1} + \beta_5 BIGCITY + \varepsilon \quad (4b)$$

The natural logarithm has been calculated for all variables (except the dummy) so the coefficients will express elasticises.

### Estimations and results

The results of the estimations are shown in tables 3-5. In 1967 the variable *vacancy ratio* showed positive coefficients for both men and women which were statistically separated from zero at a 5 % level. This result indicates that vacancies attracted immigrants in their initial settlement decision; vacancies did attract immigrants of both genders. The dummy *industrial region* is statistically separated from zero at a 1% level for both men and women in 1967. The statistically significant

**Table 3** Immigrant men and women per 1000 inhabitants 1967 and 1975. *t*-stat within brackets.

	1967		1975	
	Women	Men	Women	Men
Constant	-1,858 (.177)	-2,311 (-.238)	-18,425 (-1,397)	-10,816 (-.730)
<i>ln V<sub>t-1</sub></i>	,471* (2,276)	,454* (2,281)	,264 (1,385)	,245 (1,253)
<i>ln U<sub>t-1</sub></i>	-,282 (-1,185)	-,391 (-1,706)	-,291 (-1,333)	-,344 (.143)
<i>ln E<sub>t-1</sub></i>	-,028 (-.120)	-,011 (-.048)	,274 (.219)	,139 (.535)
<i>ln S<sub>t-1</sub></i>				
Industrial region	,655** (2,822)	,678** (3,033)	,357 (.067)	,430* (2,315)
d.f.	16	16	16	16
<i>F</i> -value	2,688	3,219*	3,671*	3,341*
Durbin-Watson	1,973	1,740	2,221	2,199
Adj.- <i>R</i> <sup>2</sup>	,252	,307	,348	,319

\*\*\* Statistically significant at 0.1%-level

\*\* Statistically significant at 1%-level

\* Statistically significant at 5%-level

result for the dummy industrial region indicates that (a) immigrants came for jobs in industry, but also (b) that these regions, with many previous immigrants, attracted new immigrants. The results for *unemployment* and *employment* are not statistically separated from zero.

In 1975, the only result with a coefficient statistically separated from zero at a 5 % level is the dummy *industrial regions* for men. If the result is caused by a demand on male labour by the Swedish industry, or if it is a network effect from previous immigrants is hard to tell.

While the three models in 1990 actually explain a lot regarding the initial settlement patterns of women, the same models fail to explain the initial settlement patterns of men (table 4). The dummy variables *refugee centres* and *big cities* do not add anything to the models. For all three models on female immigration in 1990 the accumulated stock of previous immigrants, *S*, show positive coefficients and they are statistically separated from zero at a 1 % level.

Table 4 Immigrant men and women per 1000 inhabitants 1990. *t*-stat within brackets.

	1990		1990 (1)		1990 (2)	
	Women	Men	Women	Men	Women	Men
Constant	-13,441 (-,801)	-24,292 (-1,254)	-11,970 (-,691)	-23,637 (-,1,171)	-14,308 (-,818)	-25,744 (-,1,280)
<i>In V</i> <sub>t-1</sub>	-,004 (-,023)	,009 (,040)	-,021 (-,108)	,001 (,006)	-,003 (-,013)	,012 (,052)
<i>In U</i> <sub>t-1</sub>	,068 (,239)	,381 (1,121)	,113 (,377)	,402 (1,107)	,064 (,219)	,375 (1,074)
<i>In E</i> <sub>t-1</sub>	,220 (,746)	,439 (1,242)	,195 (,639)	,427 (1,160)	,234 (,762)	,463 (1,264)
<i>In S</i> <sub>t-1</sub>	,655** (3,562)	,450 <sup>a</sup> (2,042)	,652** (3,473)	,449 (1,975)	,687** (3,195)	,506 (1,970)
Refcentr			-,127 (-,578)	-,059 (-,221)		
Bigcity					-,069 (-,314)	-,120 (-,457)
d.f.	16	16	15	15	15	15
<i>F</i> -value	4,455*	1,883	3,482*	1,426	3,383*	1,473
Durbin-Watson	1,949	1,355	1,803	1,277	1,924	1,344
Adj.- <i>R</i> <sup>2</sup>	,409	,150	,383	,096	,373	,106

\*\*\* Statistically significant at 0.1%-level

\*\* Statistically significant at 1%-level

\* Statistically significant at 5%-level

a. Statistically significant at 6%-level

Table 5 Immigrant men and women per 1000 inhabitants 2005. *t*-stat within brackets.

	2005		2005 (1)		2005 (2)	
	Women	Men	Women	Men	Women	Men
Constant	7,060 (,347)	13,398 (1,653)	6,924 (,924)	13,440 (1,604)	10,992 (1,687)	17,666* (2,411)
<i>In V</i> <sub>t-1</sub>	-,024 (-,141)	,125 (,798)	-,010 (-,054)	,122 (,734)	-,087 (-,573)	,070 (,498)
<i>In U</i> <sub>t-1</sub>	,000 (,001)	-,094 (-,503)	-,032 (-,141)	-,086 (-,413)	-,079 (-,436)	-,165 (-,987)
<i>In E</i> <sub>t-1</sub>	-,306 (-,1,198)	-,467 <sup>a</sup> (-2,011)	-,303 (-,1,151)	-,468 <sup>a</sup> (-,1,951)	-,417 (-,1,840)	-,565* (-,2,719)
<i>In S</i> <sub>t-1</sub>	,897*** (4,676)	,932*** (5,347)	,907*** (4,558)	,929*** (5,111)	,691** (3,719)	,749*** (4,394)
Refcentr			,073 (,383)	-,018 (-,105)		
Bigcity					,427* (2,496)	,378* (2,409)
d.f.	16	16	15	15	15	15
<i>F</i> -value	6,240**	8,401***	4,755**	6,308**	7,870***	9,899***
Durbin-Watson	1,797	1,573	1,759	1,605	1,874	2,213
Adj.- <i>R</i> <sup>2</sup>	,512	,597	,484	,570	,632	,690

\*\*\* Statistically significant at 0.1%-level

\*\* Statistically significant at 1%-level

\* Statistically significant at 5%-level

a. Statistically significant at 6%-level

The accumulated stock of immigrants,  $S$ , show positive coefficients which are statistically separated from zero at a 0.1% level for both genders in all models in 2005. Furthermore, the dummy *big city* also show positive coefficients for both genders which are statistically separated from zero at a 5 % level. These results are expected. Hence, the result for the dummy variable *refugee centre* is unexpected; the coefficients are not statistically separated from zero for either gender. Finally, the coefficients for men on the variable *employment rate* show negatively coefficients statistically separated from zero at a 6 % level in model 2005 and 2005 (1), and at a 5 % level in model 2005 (2). This means that the lower employment rates a region have, the more male immigrants will be attracted. Regions with large universities usually have relatively low employment rate (as an effect of all the non-working students in the population), which could indicate that the male immigrants are students.

### Concluding remarks

In line with the findings in Rauhut & Johansson (2008, 2010) no statistically significant coefficients were obtained in this study regarding unemployment. The unemployment rate,  $U$ , did neither repel men nor women in their initial regional settlement decision 1967-2005. With one exception, *vacancies*,  $V$ , did not influence the immigrants by gender when they settled down in Sweden for any of the studied years; the exception is 1967. This is also in line with results from previous other study as e.g. Wadensjö (1973) and Rauhut & Johansson (2008) that have attained the same conclusions. Vacancies attracted both men and women in their initial regional settlement decision in 1967. Hypothesis no. 1 is then confirmed.

The *employment rate*,  $E$ , did not have an impact on the immigrants initial settlement decisions 1967, 1975 and 1990, neither for men nor for women. In two of the models for men in 2005 – models 2005 and 2005 (1) – the obtained coefficients are negative and statistically separated from zero at a 6 % level (see table 5). In model 2005 (2) for men the coefficient for employment rate is negative and statistically separated from zero at a 5 % level (see table 5). This means that men were attracted to regions with relatively low employment rates in their decision on settlement. Usually, regions with large universities usually have relatively low employment rates as the students are not regularly working. The coefficient for  $E$  in 2005 indicates that many of the (male) immigrants are students.

Due to the heterogeneity in the variable for the accumulated stock of immigrants,  $S$ , in 1967 and 1975 compared to  $S$  in 1990 and 2005 a dummy, *industrial regions*, was inserted into the models for 1967 and 1975. It was in the old industrial regions immigrant labour was demanded 1967-1975, so this dummy variable enables us indirectly to control for the accumulated stock of immigrants. The dummy *industrial regions* show positive coefficients, which are statistically separated from zero in 1967 and 1975. For both men and women the coefficient is statistically separated from zero at a 1 % level in 1967 and at a 5 % level for men in 1975. Previous immigrants attracted both men and women in their initial regional settlement decision 1967 and men in their initial regional settlement decision 1975. The findings confirm hypothesis no 4 for 1967 and partly for 1975.

The coefficients for the *accumulated stock of immigrants*,  $S$ , are positive and statistically separated from zero at a 1 % level for women in 1990, but not for men. The findings confirm hypothesis no 4 for women, but not for men. This result needs to be elaborated further in future studies. With one exception, the accumulated stock of immigrants,  $S$ , show positive coefficients which are statistically separated from zero at a 0.1% level for both genders in the models for 2005; the exception is for women in the 2005 (2) model, where the coefficient is statistically separated from zero at a 1% level. The findings confirm hypothesis no 4 for both genders.

The overall conclusion regarding the impact of previous immigration on the initial regional settlement pattern is that of previous immigration matters. Previous immigrants had an impact on both genders in their initial regional settlement pattern in 1967 and 2005, on men in 1975 and on women in 1990.

The coefficient for the dummy variable *refugee centre* showed no positive value, neither for men nor women, which is statistically separated from zero at a 5% level in 1990 or 2005. This is a bit puzzling at first glance. In the study by Rauhut & Johansson (2010) some refugee groups showed statistically significant coefficients for the dummy variable *refugee centre*. One possible explanation can be that in a *gender perspective* the initial settlement patterns actually are inconclusive or irrelevant; as the refugees do not decide themselves where to settle, so how can there be any gender differences? If this should be the reason for the absence of statistically significant results in 1990, then it could be expected that gender patterns would emerge in 2005 since the “*Hela Sverige*”-strategy was relaxed in 1995. Hence, the result is the same for 2005 as for 1990. In any case, hypothesis no 5 is confirmed.

The dummy variable *big city* had a positive coefficient in 2005 and the coefficient was statistically separated from zero at a 5% level. This dummy was inserted in the model to control for the returning Swedish nationals. They have networks and ties to the region they previously emigrated from. The obtained result indicates this and thereby giving hypothesis no 4 support.

This study indicates that the traditional neoclassical push-pull theories concerning labour market conditions seem, thus, to be of low relevance in explanation of the immigrants' initial settlement patterns and the factors behind. This is not surprising as immigrants and the especially refugees are not affected by economic conditions in the same way as natives and blue-collar workers from abroad. This implies also that the traditional push- and pull-theories are of less relevance to explain the settlement pattern of immigrants today – at least concerning the initial settlement. The network theory appears to have more explanatory power than the traditional push- and pull-theories regarding the initial settlement in Sweden.

Ravenstein's old law about the size of the destination area (Ravenstein 1885) – in this case the size of immigrant stock in certain metropolitan regions – appears to be of interest, although the distribution of immigrants have been more evenly distributed at regional level during the past decades (Johansson & Rauhut 2008). Whether this is a qualified guess or not is worth further and more in-depth research not only from a sociological approach but also from an economic and historical research approach. Another theme that is worth further research is the age aspects concerning the time dimension as well the spatial distribution and the effects on the regional economies.

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