Employment Assimilation of Immigrants: Evidence from Finland

Matti Sarvimäki[1], Kari Hämäläinen, Aki Kangasharju, Sari Pekkala

Government Institute for Economic Research (VATT)
Arkadiankatu 7, P.O Box 1279, 00101 Helsinki, Finland

June 14th, 2005

Abstract:

This paper investigates the employment assimilation of immigrants who entered Finland between 1990 and 2002. Immigrant groups are classified into four categories: OECD, former Soviet Union, Refugee Countries, and others. The main finding is that the employment probability of immigrants clearly improves over the time spent in Finland. However, immigrant groups differ in their assimilation process, and their employment probability remains substantially lower than that of the natives. Further, since the employment probability of the comparison group also improves, immigrants do not appear to be narrowing the employment gap to the natives over time spent in Finland.

Keywords: Immigration, employment, assimilation

JEL Classification: J23, J61, J68

Preliminary – Comments welcome.

Prepared for 45th Congress of the European Regional Science Association, Vrije Universiteit Amsterdam, 23-27 August 2005

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[1] Corresponding author, Contact: Government Institute for Economic Research (VATT), P.O. Box 1279, 00101 Helsinki, FINLAND; tel. +358-9-703 2953; e-mail: matti.sarvimaki@vatt.fi.

1. Introduction

The rich literature on immigration assimilation to host country labour market has been summarized in a number of surveys (e.g. Borjas, 1994; Bauer and Zimmermann, 1999). Most of the empirical results concern the traditional immigration destination countries, USA, UK, Canada and Australia. More recently, a number of studies have looked at immigrant assimilation in the European labour markets (e.g. Bell, 1997; Bellemare, 2003; Constant and Massey, 2003). However, there are few papers studying countries that have only recently started to receive immigrant labour force. For example, traditional emigration countries such as Spain, Portugal and Finland have become a destination of considerable immigration during the 1990s and early 2000s.

A key difference between studies made on the US and Europe is that the former mainly look at immigrant assimilation in terms of earnings, whereas the latter deal mainly with employment assimilation.[2] Especially the Scandinavian studies have looked at immigrants' employment status over time spent in the host country (e.g. Edin, LaLonde and Åslund, 2000; Husted *et al.*, 2001; Hansen and Lofstrom, 2003; Arai and Vilhelmsson, 2004). Reasons for this differential focus include the higher unemployment rates in many European countries and the more generous unemployment and welfare benefit system, especially in the Scandinavian countries.

This study is the first attempt to estimate immigrants' assimilation to the labour markets of Finland. Finland provides an interesting case for such a study because, after a long history of emigration, Finland turned into a net-immigration country in the 1980s. Moreover, Finnish data are particularly well suited for such an analysis: we are able to use panel data of immigrants coming to Finland between 1989–2002, and follow them until year 2002, or until they re-emigrate (or die).

This study estimates a model for employment assimilation over time the immigrants spend in Finland. We argue that – especially in the Finnish context– the most important part of assimilation is getting a job. Reasons for this include the substantial language difficulties experienced by the immigrants, the relatively small earnings differences among employed person, the high level of unemployment and relatively generous unemployment benefits. Hence, we study the determinants

[2] However, the concept of assimilation, whether from the point of view of wages or employment, is not obvious itself. For different views of what "assimilation" means, see Chiswick (1978) and LaLonde and Topel (1992). Here we take assimilation to mean any improvement in labour market status over time spent in Finland.

of being employed: in particular, the time spent in Finland and the differences in assimilation patterns across immigrant groups.

We find that the employment probability of immigrants clearly improves over the time spent in Finland. However, immigrant groups differ widely in their assimilation process, and their employment probability stays substantially lower than that of the natives. Further, since the employment probability of the comparison group also improves, immigrants do not appear to be narrowing the employment gap to natives over time spent in Finland.

The questions studied in this paper have considerable policy relevance. First, they have direct implications for immigration policy, the focus of which is currently being reconsidered. Second, understanding the costs and benefits of immigration to the host country public sector is of primary importance when considering economic migration as a mechanism for increasing labour supply. Further, during the next decades, most industrial countries will face serious challenges due to their aging populations, and it has often been argued that one potential solution to the shrinking population may be provided by immigration.

The second part of this paper discusses Finnish immigration law, and introduces immigration as a historical and economic phenomenon in Finland. Third section presents our empirical strategy and the econometric model. In the fourth section, the data set is described, while the actual analyses are presented in the fifth section. Section six concludes the paper with some policy implications.

2. Background: Immigration to Finland

Immigration patterns represent one of the major differences between Finland and other Nordic countries. Historically, Finland has been a country of emigration, immigrants having mostly consisted of return migrants and their foreign-born children and spouses. The most intense emigration period followed the launch of the common Nordic Labour Market in 1954. During the next 14 years roughly six percent of Finnish population emigrated to Sweden (see figure 1). This pattern of emigration and return migration changed in the early 1990s, as three new immigrant groups emerged: labour migrants, Soviet-born return migrants and refugees. As a result, the non-Finnish speaking population almost doubled in ten years to its current level of 2.2 percent of total population. Currently, immigration represents just over 40 percent of the total annual population growth.

Unfortunately, our data do not allow the separation of labour and family migration from each other. Even thought the importance of labour migration has increased, it is likely that family migration has dominated labour migration for two reasons. First, Finland experienced a severe recession in the early 1990s. The unemployment rate of the natives soared to over 20 percent of which level it has decreased only gradually. The labour market situation of immigrants was far graver, the unemployment rate of foreign citizens peaking at 58 percent in 1995. Even now the unemployment rate of immigrants is almost 40 percent. Second, Finland's policy towards labour migration has been very restrictive. The Finnish law still gives citizens of EU/EEA prioritised access to the vacant posts in Finland. In practice this means that the labour administration evaluates whether suitable work force is available in EU/EEA "in a reasonable time" for any particular vacant post before work permit is granted for immigrants outside EU.

The most dramatic change, however, was the dissolution of the Soviet Union that changed the nature of return migration by increasing the immigration of ethnic-Finns residing in the former Soviet Union and Estonians. Ethnic-Finns were granted the right to return in 1990. Yet, as the evaluation of their Finnish ancestry was based on Soviet documents[3], it is uncertain whether ethnic-Finns differ from other Russian immigrants in terms of assimilation process. For example, the Ministry of Labour (1998) reports that in the age group of 24-years or younger, only two percent of the Soviet-born ethnic-Finns have good or excellent Finnish language skills. When it comes to Estonians, it is likely that they have an above-average assimilation capacity owing to the lingual and cultural proximity to Finland. All together, individuals born in the former Soviet Union made up approximately 40 percent of Finland's immigrant population in 2003.

Finally, the number of refugees seeking asylum from Finland increased considerably in the early 1990s. The numbers have remained quite small owing to restrictive asylum and refugee policy. Regardless of this, the refugees and their family members make up approximately 20 percent of all immigrants. The largest refugee groups have arrived from Somalia, former Yugoslavia, Iraq and Iran.

[3] The requirement is that either (at least) one of the grandparents was a Finnish citizen or (at least) one parent or two grandparents were ethnic-Finns according to the Soviet documents. Since October 2003, also passing a Finnish language test has been required.

3. Empirical model

The analyses reported in this study are based on register data. Even though register data are free from any recall bias they rely on information collected by the authorities of the host country. This typically results in data sets that are fairly limited on pre-immigration information, which makes comparisons of the economic success of immigrants from different origin countries difficult. Missing information on, say, education that immigrants have acquired in an origin country will be reflected in assimilation measures provided that there are differences in pre-immigration education across origin countries. Fortunately, this data limitation can be overcome if one has access to panel data, as we have, since pre-immigration factors are time-invariant when examining the labour market possibilities of immigrants in their new homeland.

To construct a model for the progress of immigrants' employment in time, let the underlying response variable be y_{it}^{*} which measures the ith individual's propensity to be employed in period t. This latent variable is related to observed differences among cross-sectional units as

$$y_{it}^{*} = a_0 + \lambda' z_i + \beta' x_{it} + u_{it}, \qquad \text{i} = 1, \ldots, \text{N}, \text{t} = 1, \ldots, \text{T}, \tag{1}$$

where the propensity variable is related to time-invariant variables, z_i, and time-varying variables, x_{it}. Time-invariant variables include a dummy indicator for having a Finnish spouse at the end of immigration year and the regional unemployment rate at the year of immigration. Time-varying variables control for observable differences in individual characteristics, a spouse's characteristics and an individual having a Finnish degree of upper level or tertiary education[4]. Time-varying explanatory variables also include the set of dummy variables indicating the years spent in Finland. In a usual manner, the parameter estimates of years-since-migration variables are interpreted as measuring assimilation. It should be noted, however, that the model includes also other explanatory variables that are connected to the process of assimilation, such as having obtained an educational degree in Finland. In this case, the years-since-migration dummies reflect assimilation arising from other factors connected with the time spent in Finland, such as language fluency, the accumulation

[4] The data include some information on education acquired outside Finland but this information enters the registers only if an immigrant applies for recognition of her foreign education or becomes unemployed. The usual case for foreign education becoming registered is via unemployment agencies so this particular piece of information is available only for a non-randomly selected sample of immigrants. For this reason, estimations include only Finnish educational degrees obtained after a period of study in Finland. Unfortunately, the data do not allow us to make this distinction for spouse's education.

of knowledge on the functioning of labour markets etc. In what follows, we take a closer look at changes in employment possibilities of immigrants arising from time spent in Finland and from other observable factors.

To incorporate unobserved heterogeneity into analyses, the composite error term, u_{it}, is separated into an individual-specific, time-invariant unobserved effect, α_i, and an iid random term, ε_{it}, as

$$u_{it} = \alpha_i + \varepsilon_{it}. \quad (2)$$

This specification allows observationally identical individuals to have different probabilities of employment. Accordingly, the labour market career of an immigrant may differ systematically from the average behaviour of a similar immigrant owing to pre-immigration factors. This intuitively appealing extension comes with the cost. Since the unobserved heterogeneity persists over time, the composite error term, u_{it}, is correlated across cross-section units in time even if the error terms ε_{it} are purely random. Obviously, this correlation has to be taken into account when constructing the empirical model.

Unlike in linear models, the estimation of unknown parameters presented in equation (1) and α_i is not asymptotically independent (Hsiao, 1991). For this reason, there is no easy way to eliminate the individual-specific effect in the context of fixed-effects. An attractive alternative is to treat the individual heterogeneity effect, α_i, as randomly distributed in the population. The specification of distributions as $\alpha_i \sim IN(0, \sigma_\alpha^2)$ and $\varepsilon_{it} \sim IN(0, \sigma_\varepsilon^2)$, together with the assumptions that α_i and ε_{it} are independent of each other and of the explanatory variables, leads to the random effects probit model, first discussed in Heckman and Willis (1976) . Another appealing feature of random effects formulation is that it produces parameter estimates also for observed, time-invariant factors that are important when examining the impact of economic and personal factors at the time of immigration on further employment possibilities.

An additional issue that arises in the random effects probit model is that the parameter estimates are biased if unobserved heterogeneity is correlated with observed heterogeneity. Chamberlain (1984) suggested that a potential dependence can be allowed by specifying a distribution for α_i conditional on the leads and lags of time-varying explanatory variables. The drawback with this is, however, that the number of parameters to be estimated increases substantially. An alternative is provided by Mundlak (1978), allowing unobserved and observed heterogeneity to be mutually dependent via the means of time-varying explanatory variables as

(3) $$\alpha_i = a_1 + b'\overline{x_i} + \eta_i ,$$

where $\eta_i \sim IN(0, \sigma_\eta^2)$ and is independent of the explanatory variables in equation (1).

Since our only information consists of whether or not some particular event occurred, we observe the mere sign of the latent variable via the indicator function $y_{it} = 1_{y_{it}^* > 0}$. To set up the scale, some normalisation is required. A typical normalisation is to set the error variance σ_u^2 equal to one. After this normalisation the equations (1) – (3) set up the probability of employment for an individual i at time t and conditional on η_i as

(4) $$\Pr\left[y_{it} \mid z_i, x_{it}, \overline{x}_i, \eta_i \right] = \Phi\left[\left(a_0 + \lambda' z_i + \beta' x_{it} + b'\overline{x}_i + \eta_i \right)\left(2y_{it} - 1 \right) \right],$$

where Φ denotes the cumulative distribution function of the standard normal distribution. The joint probability of the observed run of employment states, conditional on the unobserved heterogeneity, is obtained from equation (4) by multiplying the transition probabilities of different time periods with each other. When the probability function for y_{it} conditional on η_i is replaced by the probability function that is marginal on η_i, the unconditional log-likelihood function for a random sample of N cross-section units over T time periods becomes (see e.g. Hsiao, 1986)

(6) $$\log L = \sum_{i=1}^{N} \log \int_{-\infty}^{\infty} \left\{ \prod_{t=1}^{T} \Phi\left[\left(\left(a_0 + \lambda' z_i + \beta' x_{it} + b'\overline{x}_i + \sigma_\eta \eta^* \right)\left(2y_{it} - 1 \right) \right) \right] \right\} \phi(\eta^*) d\eta^*$$

where $\eta^* = \eta/\sigma_\eta$ and ϕ denotes the probability distribution function of the univariate normal distribution. Butler and Moffitt (1982) show that this integral can be approximated by a Gaussian-Hermite Quadrature.

4. Data and descriptive statistics

We use a panel data set consisting of a representative random sample of working age immigrants and natives in 1989–2002. Statistics Finland has drawn the data from the population census and several registers including tax register, pension register, student register and the register maintained by the labour administration. Immigrants are defined as foreign-born individuals, whose native tongue is not Finnish and who enter the sample as a citizen of a foreign country. The sample employed in analyses is obtained in two steps. First, Statistic Finland has drawn a 15 percent random sample of immigrants living in Finland in 1989 and a 2 percent random sample of working

age natives in 1989. Second, each year a 15 percent random sample of immigrant cohort that entered Finland during that year is added to the sample of immigrants. Similarly, each year a two percent random sample of natives who turned 15 during that year is added to the sample of natives. The second step is carried out for the period of 1990-2002. Each person is followed until the end of 2002, death or emigration resulting in an unbalanced panel data set. Additional sample selection rules employed in the analyses are: individuals are 20–60 years old, are not living with their parents and are not pensioners. Also the first observation of each individual, obtained in the end of the year she moved to Finland, is excluded from the analyses.

The empirical model is estimated separately for four different groups of immigrants using country of birth as an indicator of the origin country. Provided that the amount of human capital that immigrants bring with them and its transferability to the destination country is correlated with the origin country, this allows different distributions of unobserved pre-migration factors from different groups of countries. At the same time, separate estimations allow the observable background characteristics, such as returns to education acquired in Finland, to have different impacts on the probability of employment among immigrants with different origins. The groups are those born in (a) the OECD countries, (b) in the former Soviet Union, (c) former Yugoslavia, Iran, Iraq and Somalia (hereafter the "refugee countries"), and (d) "Others".

Sample means illustrate the sharp differences between these groups (Table 1a and 1b). When it comes to labour market variables, the OECD and the refugee countries represent the opposite ends, the difference between the employment rates ranging up to 34 percentage points. The employment rates of others and those born in the former Soviet Union are similar to each other being some ten percentage points lower than that of the OECD immigrants. The employment rate is the lowest among females born in the refugee countries.[5] Even thought, the employment rates among immigrants from the OECD countries are highest among immigrants, they are still considerably lower than that of the natives. Interestingly, this does not pass on to the unemployment rates as a high proportion of the OECD immigrants is out of the labour force. In fact, being out of the labour is one of the unifying characters among the immigrant groups *vis-à-vis* the natives.

The variables describing conditions in the year of arrival reflect the different reasons to immigrate. A majority of individuals born in the OECD-countries had a Finnish spouse in the end of their first

[5] Note, that our definition of employment is quite strict. That is, a person is defined as employed, if she worked in the open labour markets (i.e. not via labour administration's programs) for more than six months during a given year.

year in Finland, which implies that they immigrated predominantly for family reasons. The same is true for over 40 percent of females born in the former Soviet Union and of those in the group "Other". The differences in the other time-invariant variable – regional unemployment rate in the year of arrival – arise from the timing of immigration: major flows of refugees and immigrants from the former Soviet Union entered Finland during the recession of the early 1990s.

Other significant differences concern family variables and the region of residence. First thing to notice is that immigrants from refugee countries have more children than other groups. This is partly due to their lower average age, but even after controlling the impact of age, they have approximately 0.7 children under 18 years old more than the other groups. The share of single mothers is highest among those born in the refugee countries or Soviet Union and lowest among the OECD-born. Finally, while about a quarter of natives live in Uusimaa (the capital region), it hosts over half of Finland's immigrant population.

5. Estimation results

Tables 2a and 2b present our results. As the nonlinearity of the model does not allow for straightforward interpretation of the coefficients, we also report marginal effects. In calculating marginal effects one has to take into account that observably identical individuals may have different propensities of employment owing to unobserved heterogeneity. If one calculates the marginal effects by setting the unobserved component η to its mean, the result may be relevant only for a small fraction of the population. Chamberlain (1984) argued that a more attractive way is to calculate marginal effects as mean effects for a randomly drawn individual. He showed that a consistent estimator for a change in an explanatory variable from x_j^a to x_j^b is provided by

$$\frac{1}{N}\sum_{i=1}^{N}\left\{\Phi\left[\frac{\beta_j x_{jit}^b + \lambda' z_i + \beta^{-j\prime} x^{-j}{}_{it} + b'\bar{x}_i}{\sqrt{\sigma_\varepsilon^2 + \sigma_\eta^2}}\right] - \Phi\left[\frac{\beta_j x_{jit}^a + \lambda' z_i + \beta^{-j\prime} x^{-j}{}_{it} b'\bar{x}_i}{\sqrt{\sigma_\varepsilon^2 + \sigma_\eta^2}}\right]\right\},$$

where β^{-j} and $x^{-j}{}_{it}$ denote vectors of coefficients and variables other than β_j and x_j, and the parameters are replaced by their estimates (see also Arulampalam and Booth, 2000).

In terms of results, let us first focus on the dependence between the probability of being employed and time spent in Finland. The parameter estimates of years-since-migration dummies are mostly positive and statistically significant. The results imply, for example, that an immigrant who has

stayed in Finland for seven years has a 10–17 percentage points higher probability of being employed than an otherwise similar immigrant who has just arrived in Finland. Immigrants born in the OECD-countries are an exception to this rule. In this group the parameter estimates of years-since-migration dummies are found to be insignificant, or even negative. One explanation is that this group is likely to have a good knowledge concerning Finnish culture and the functioning of labour markets already in the time of immigrating. Another possible explanation is non-randomness of return migration. If those with the highest (lowest) assimilation ability leave Finland after a few years, the estimates for years-since-migration will be biased downwards (upwards) for dummies indicating longer time in the host country. The concern is most severe among OECD immigrants as they are by far more likely than others to leave Finland after a few years (Figure 2). A closer investigation of this issue is left for further research.

For immigrants from Russia and Estonia the parameter estimates of the years-since-migration dummies peak after six to seven years after which they start to decline. A decline is more pronounced in the case of men, the parameter estimates turning to insignificance after 9 years. This finding is likely to reflect the institutional changes that took place in the late 1980s and early 1990s. That is, for the first time in seven decades relatively large number of individuals born in the former Soviet Union, most notably the ethnic-Finns, were able to immigrate to Finland. As a result a large share of immigrants from the former Soviet Union immigrated in 1990–1994, i.e. in a period of severe recession. If the recession lowered the assimilation capacity of these individuals or if these cohorts were of lesser quality in terms of potential for labour market success compared to those who immigrated during the subsequent boom of late 1990s, it will be reflected in the estimates for the years-since-migration dummies. It should be noted that when the model is estimated separately for the 1991–1994 cohort, the decline of the years-since-migration parameters disappears (see table 3).

The virtue of estimating the model for several immigrant groups is well illustrated in Figure 3, which describes the evolution of employment probabilities over time spent in Finland. The bold line is obtained by calculating the probability of being employed for each observation (controlling for business cycle), and taking averages. Findings indicate that males are more likely than females to be employed regardless of the source country or years-since-migration. The employment probability during the first year in Finland ranges from almost fifty percent for a male born in an OECD-country to two percent for refugee females. Furthermore, time spent in Finland increases the employment probability for all groups. The rise is the largest among males and females immigrants

from the refugee countries, and female immigrants from the former Soviet Union. As found above, employment probability increases the least among OECD migrants.

The construction of the dashed line departs from that of the bold one in the treatment of the years-since-migration dummies. The dashed lines omits the effect of the time spend in Finland, i.e. the effect of "general assimilation" (the employment probabilities are calculated as if immigrants had been in Finland for one year). Hence, the dashed line illustrates, how the average employment probability evolves due to changes in immigrants' other observed characteristics than years-since-migration. The distance between the two lines reflects assimilation due to factors not in our data, e.g. improving language proficiency and accumulation of work experience, networks and knowledge of the functioning of the Finnish labour markets. For the OECD immigrants the bold and dashed lines are very close to each other, suggesting that "general assimilation" plays an insignifanct role. For other groups, the development of their observed characteristics (other than time spent in Finland) does not increase their employment probabilities much, whereas the general assimilation (years-since-migration-dummies) imply much clearer improvement in the labour market performance. In the case of males born in the former Soviet Union the bold line first departs from the dashed line, but around ten years since migration the two lines have nearly converged. This follows from both the parameter estimates for year-since-migration dummies (see above) and the improvement of other observed characteristics in this group.

All groups remain clearly below the figures of the natives throughout the period of investigation (Figure 4). At the highest, the employment probability of immigrants is less than 60 percent, an estimate for the average male from the OECD countries after 10 years since immigration. As the typical age of a immigrant in the year of arrival is about 30 years, a typical immigrant is about 40 at the end of period. The employment probability of native male Finns at 40 is as high as 90 percent. This indicates that despite of their improving employment success, immigrants stay behind the natives in the labour market performance even after ten years since immigration. Immigrants do not even seem to clearly catch up with the natives, as the employment probability of a Finn increases from 80 to 90 between 30 and 40 years of age. Only some immigrant groups achieve such an improvement in employment probability.

Other covariates of the estimated models produce the following findings (Tables 2a and 2b). The age effect has a typical hump-shape for most of the groups, the probability of employment being the highest at the age of 40. Being married or cohabiting has a small negative effect for most of the female groups and, a bit surprisingly to males from the former Soviet Union. Spouse's employment

and education have large positive effects for all groups. As expected, the most significant difference between the sexes arises from the presence of children. Having small children has a large negative effect on female's employment probability, but no or small positive effect for males. The average marginal effects for women are large for all groups: twelve to sixteen percentage points for a child under three, and five to nine percentage points for a child from three to six years old. The effect of being a single mother differs between the groups, however. While it considerably increases the employment probability for OECD-born, and to a lesser extent, natives and women from the former Soviet Union, the effect is negative for the remaining two groups.

Education attained in Finland has a strong positive effect. Having a Finnish upper degree increases the probability of employment by ten percentage points, the effect of tertiary education being of similar or larger magnitude. It should be noted, however, that the standard errors are quite large, in particular for tertiary degrees, due to the limited number of observations. Hence, the coefficients and average marginal effects tend to have rather wide confidence intervals.

Finally, the models include two variables that reflect the conditions upon arriving to Finland. The first one – the unemployment rate in the region of residence – has a persistent negative effect for those born in the OECD-countries, former Soviet Union and females from the refugee countries. Likely explanations include the obvious negative impact of arriving to unfavourable labour markets, negative self-selection, or both. The second – having a Finnish spouse in the year of immigration – is a bit surprising at first look. The variable has a statistically significant effect for most groups, but the signs and magnitudes differ. While females born in OECD-countries enjoy higher employment probabilities due to moving to Finland with a Finnish spouse, the opposite is true for most groups. Further, the average marginal effects are large, ranging from positive eight to negative sixteen percentage points. The results are in stark contrast to the previous findings of positive correlation between interethnic marriage and economic assimilation (see e.g. Meng and Gregory, 2005; Kantarevic, 2005). The most likely explanation for this finding is connected to restrictive policy that Finland has towards immigration. As previously discussed, an individual immigrating to Finland outside the EU to work needs not only to have a job in Finland but in order to be granted a work permit, she also needs to be applying for a job for which labour is not available in EU/EEA area. Hence it is not surprising that the employment probability for such individuals is higher than for those who immigrated for family reasons.

6. Concluding remarks

This paper investigated the employment assimilation of immigrants who entered Finland between 1990 and 2002. Immigrant groups were classified into four categories: OECD, former Soviet Union, Refugee Countries, and others. Our main finding is that the employment probability of immigrants clearly improves over time spent in Finland. However, immigrant groups differ in their assimilation process, and their employment probability stays substantially lower than that of the natives' even after ten years. Further, as employment probability of the comparison group improves over time, immigrants do not appear to be closing the employment gap to the natives over the time spent in Finland.

Males from the OECD were found to be the most successful group of immigrants: their employment probability ranges between 50 and 60 percent during the ten first years since immigration. Immigrants from the refugee countries have the poorest performance throughout the period. However, their employment probability rises from less than 10 percent in the first year up to more than 20 percent in the tenth year.

The results presented here have important policy implications. First, the major differences between native Finns and immigrants consist of the low labour force participation rate and continually below-average employment rate of the immigrants. Hence, creating policy measures to improve the labour market assimilation of immigrants is of primary importance. Related to this, further studies are necessary to understand the mechanisms behind assimilation. Particularly in the Finnish context, language proficiency might be of major importance. Further objectives for research include the effect of non-random re-emigration on the estimated assimilation profile, and assimilation from the point of view of earnings.

References

Arai and Vilhelmsson (2004) Immigrants' and natives' unemployment risk: Productivity differentials or discrimination, Industrial Relations, 43, 3, 690-698.

Arulampalam, W. and Booth, A.L. (2000), Union Status of Young Men in Britain: A Decade of Change, *Journal of Applied Econometrics*, 15, 289-310.

Bauer and Zimmermann (1999) Assessment of Possible Migration Pressure and its Labour Market Impact Following EU Enlargement to Central and Eastern Europe, IZA research Reports no.3.

Bell (1997) The Performance of Immigrants in the United Kingdom: Evidence from the GHS, Economic Journal, 107, 333-344.

Bellemare (2003) Economic Assimilation and Outmigration of Immigrants in West-Germany, Tilburg University, CentER Discussion Paper No. 65.

Borjas (1994) The economics of immigration, Journal of Economic Literature, 32, 4, 1667-1717.

Butler, J.S. and Moffitt, R. (1982), A Computationally Efficient Quadrature Procedure for the One-Factor Multinomial Probit model, *Econometrica*, 50, 761-764.

Chamberlain G. (1984), Panel Data, in Griliches, Z. and Intriligator, M.D. (eds.) *Handbook of Econometrics, vol. 2*, North-Holland, Amsterdam.

Chiswick (1978) The Effect of Americanization on the Earnings of Foreign-born Men, Journal of Political Economy, 86, 5, 897-921.

Constant and Massey (2003) Self-Selection, Earnings, and Out-Migration: A Longitudinal Study of Immigrants to Germany, Journal of Population Economics, 16, 631-653.

Edin, LaLonde and Åslund (2000) Emigration of Immigrants and Measures of Immigrant Assimilation: Evidence from Sweden, *Swedish Economic Policy Review*, *7*, 2, 163-204.

Hansen and Lofstrom (2003) Immigrant Assimilation and Welfare Participation: Do Immigrants Assimilate Into or Out-of Welfare?, *Journal of Human Resources*, 38, 1, 74-98.

Heckman, J.J. and Willis, R. (1976), Estimation of a Stochastic Model of Reproduction: An Econometric Approach, in Terleckyj, N. *Household Production and Consumption*, NBER, New York

Hsiao, C. (1986), *Analysis of Panel Data*, Cambridge University Press, Cambridge.

Hsiao, C. (1991), Logit and Probit Models, in Matyas, L. and Sevestre, P. (eds.) *The Econometrics of Panel Data*, Kluwer Academic Publishers, Dordrecht.

Husted, L., H. S. Nielsen, M. Rosholm and N. Smith (2001), Employment and Wage Assimilation of Male First Generation Immigrants in Denmark. *International Journal of Manpower* 22: 39-68

Kantarevic J. (2005): Interethnic Marriages and Economic Assimilation of Immigrants. IZA Working Papers series. No. 1142.

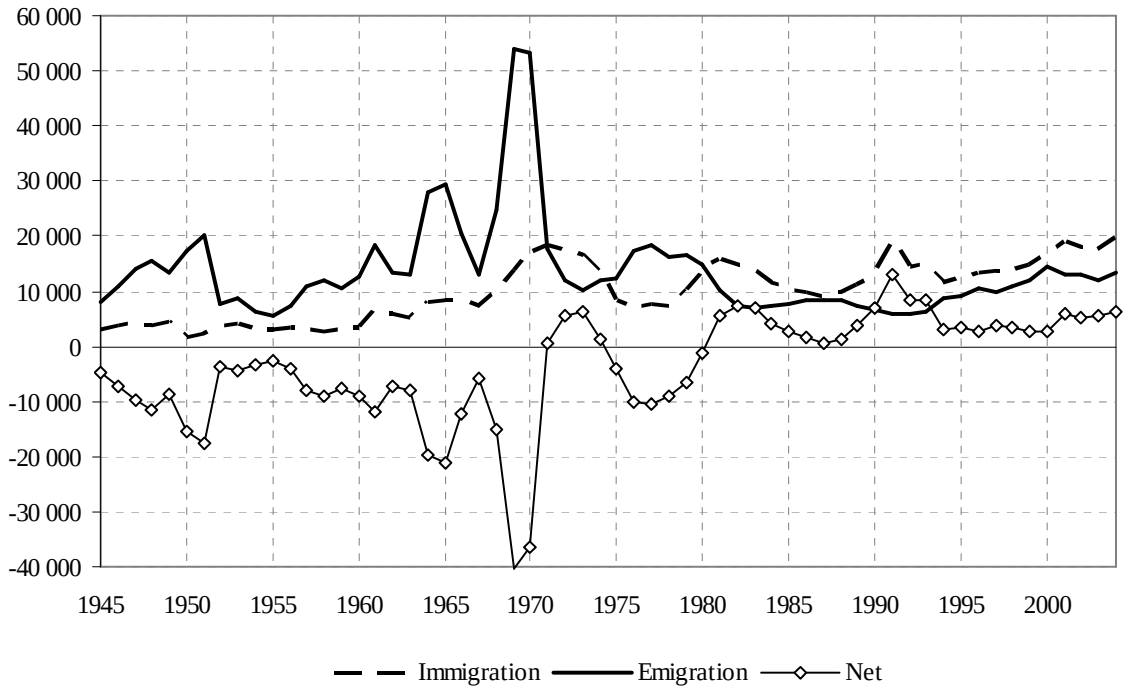
LaLonde and Topel (1992) The Assimilation of Immigrants in the U S Labor Market, In G. J. Borjas and R. B. Freeman (eds.), Immigration and the work force: Economic consequences for the United States and source areas. Chicago and London: University of Chicago Press, 67-92.

Meng and Gregory (2005): Intermarriage and the Economic Assimilation of Immigrants. *Journal of Labor Economics* 23:135–174

Ministry of Labour (1998). Inkerinsuomalaisten maahanmuutto Suomeen 1990-luvulla. Työministeri Liisa Jaakonsaaren Eduskunnan ulkasiainvaliokunnalle 9.12.1998 antama Suomen hallituksen selonteko.

Mundlak, Y. (1978), On the Pooling of Time Series and Cross-section Data, *Econometrica*, 46, 69-85.

Figure 1. Emigration from and immigration to Finland, 1945–2004



Source: Institute of Migration

Figure 2. Cumulative emigration of immigrants (with respect to years-since-migration)

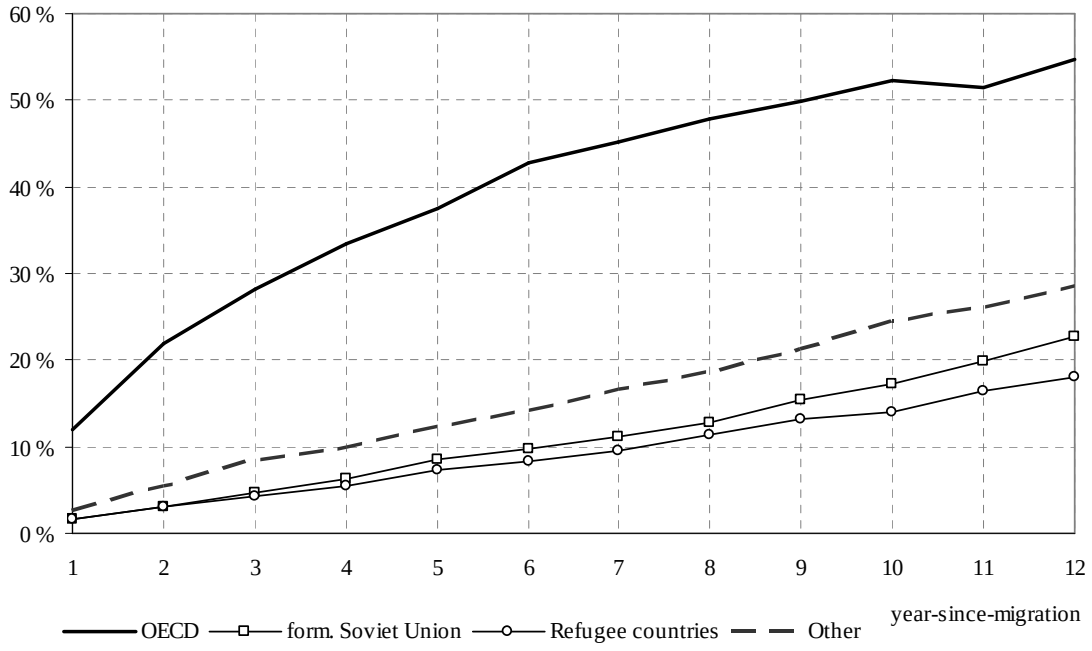


Figure 3. Employment probabilities of immigrants (with respect to years-since-migration), estimated probabilities

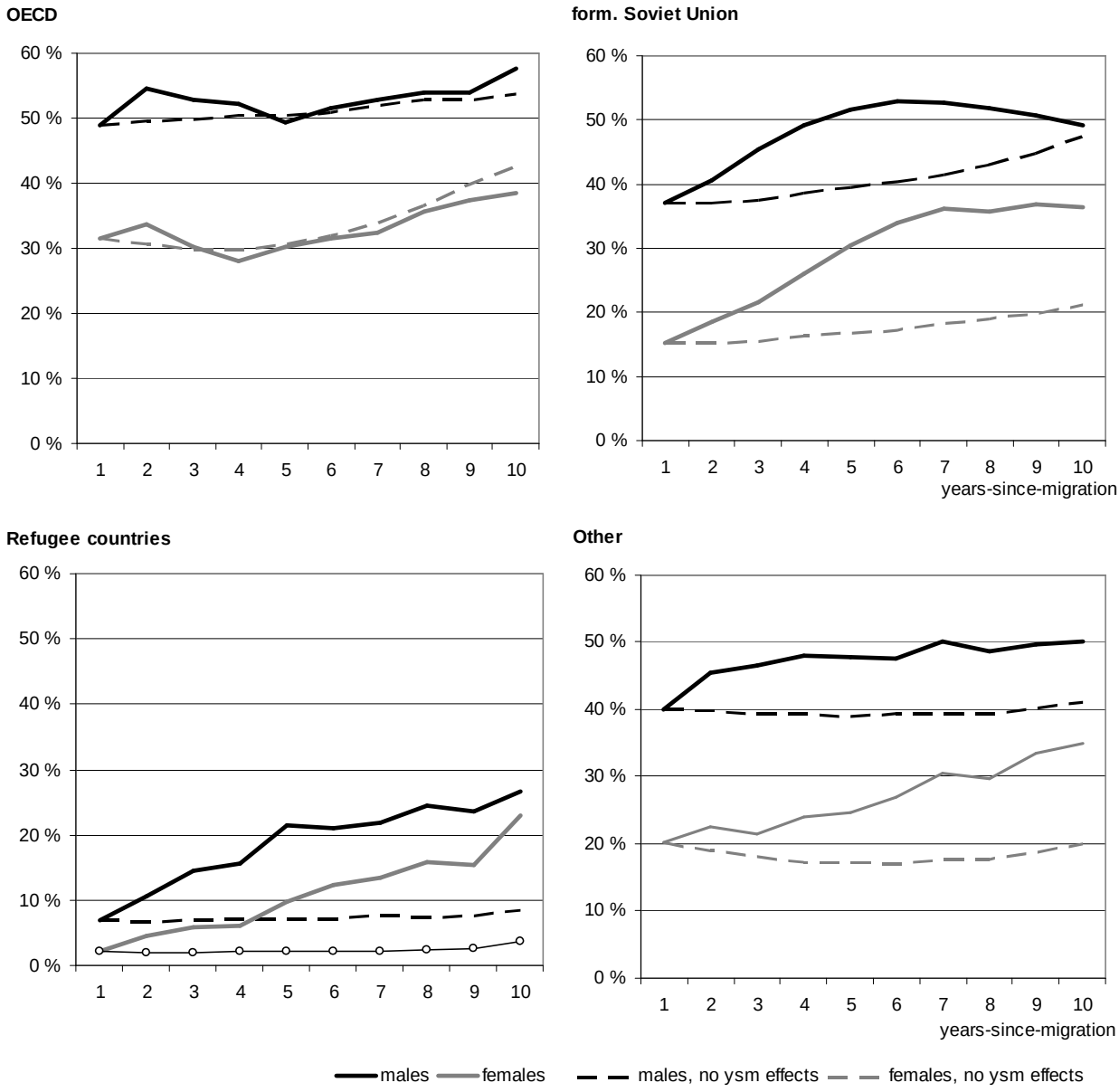


Figure 4. Employment probabilities of the natives (with respect to age), estimated probabilities

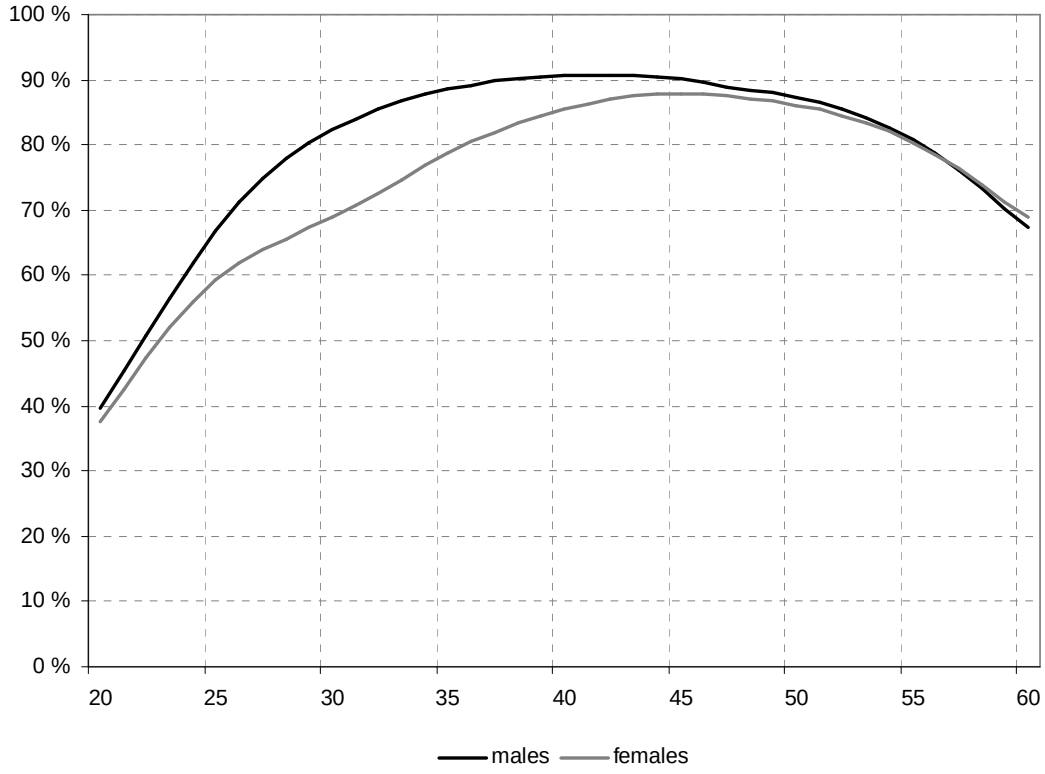


Table 1a. Sample means, men

	form				
	OECD	*Sov. Union*	*YIIS*[a]	*Other*	*Natives*
Employed	0.58	0.46	0.20	0.47	0.80
Unemployed	0.14	0.31	0.55	0.27	0.14
Age	37.18	37.23	33.91	34.75	40.42
Age at arrival	32.09	32.41	28.96	29.42	
Married or cohabits	0.67	0.68	0.58	0.64	0.74
Spouse employed	0.44	0.25	0.09	0.30	0.55
Lone parent	0.01	0.01	0.02	0.01	0.02
no. children under 3-years old	0.19	0.13	0.35	0.24	0.13
no. children 3-6-years old	0.21	0.16	0.37	0.24	0.18
Lives in Uusimaa (Southern Finland)	0.54	0.54	0.49	0.63	0.26
Has a Finnish upper degree	0.03	0.03	0.08	0.06	0.57
Has a Finnish tertiary degree	0.02	0.01	0.01	0.04	0.08
Spouse has a upper degree	0.31	0.25	0.11	0.24	0.46
Spouse has a tertiary degree	0.12	0.08	0.02	0.05	0.05
Year of immigration:					
has a Finnish spouse	0.63	0.09	0.08	0.43	
regional unemployment rate	5.22	9.30	10.71	6.31	
in Finland in 1989	0.43	0.07	0.05	0.28	
Individuals	2 225	1 848	1 008	1 882	31 614
Observations	12 931	10 321	6 550	12 449	300 385

Table 1b. Sample means, women

	form				
	OECD	*Sov. Union*	*YIIS*[a]	*Other*	*Natives*
Employed	0.43	0.30	0.09	0.31	0.75
Unemployed	0.13	0.39	0.35	0.25	0.13
Age	35.83	37.01	33.72	34.39	39.86
Age at arrival	30.63	32.06	29.10	29.41	
Married or cohabits	0.72	0.70	0.69	0.73	0.73
Spouse employed	0.55	0.42	0.14	0.45	0.59
Lone parent	0.06	0.15	0.14	0.10	0.09
no. children under 3-years old	0.22	0.17	0.51	0.29	0.14
no. children 3-6-years old	0.28	0.23	0.59	0.31	0.20
Lives in Uusimaa (Southern Finland)	0.49	0.46	0.54	0.59	0.28
Has a Finnish upper degree	0.04	0.05	0.03	0.04	0.60
Has a Finnish tertiary degree	0.02	0.01	0.00	0.01	0.07
Spouse has a upper degree	0.26	0.33	0.20	0.26	0.42
Spouse has a tertiary degree	0.12	0.06	0.03	0.08	0.06
Year of immigration:					
has a Finnish spouse	0.50	0.43	0.01	0.41	
regional unemployment rate	4.91	9.28	11.43	7.22	
in Finland in 1989	0.47	0.14	0.04	0.26	
Individuals	1 197	3 218	731	1 517	32 465
Observations	6 918	19 655	4 088	8 695	322 372

[a] form. Yugoslavia, Iran, Iraq, Somalia

Table 2a.. Estimates, males

	OECD			*form. Soviet Union*			*Refugee countries* [b]			*Other*			*Natives*		
	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]
Year since migration (in comparision to one)															
2	**0.277**	0.074	0.048	**0.187**	0.075	0.035	**0.434**	0.148	0.044	**0.275**	0.071	0.056			
3	**0.173**	0.080	0.030	**0.411**	0.081	0.077	**0.761**	0.147	0.086	**0.342**	0.075	0.071			
4	0.104	0.088	0.018	**0.550**	0.087	0.103	**0.810**	0.152	0.093	**0.416**	0.080	0.086			
5	-0.064	0.096	-0.011	**0.634**	0.093	0.119	**1.183**	0.154	0.152	**0.415**	0.084	0.086			
6	0.039	0.103	0.007	**0.656**	0.099	0.123	**1.158**	0.160	0.147	**0.390**	0.088	0.080			
7	0.047	0.113	0.008	**0.582**	0.106	0.109	**1.175**	0.169	0.150	**0.514**	0.092	0.106			
8	0.062	0.123	0.011	**0.463**	0.115	0.087	**1.316**	0.180	0.175	**0.441**	0.097	0.091			
9	0.068	0.136	0.012	**0.319**	0.126	0.060	**1.253**	0.189	0.164	**0.447**	0.105	0.092			
10-12	**0.213**	0.130	0.037	0.101	0.135	0.019	**1.325**	0.207	0.176	**0.432**	0.104	0.089			
in Finland in 1989	**0.316**	0.166	0.055	-0.208	0.235	-0.038	**1.834**	0.360	0.275	**0.520**	0.141	0.108			
Observed characteristics															
age	**0.145**	0.025	0.000	**0.099**	0.024	0.001	**0.082**	0.038	-0.003	*0.037*	0.024	-0.004	**0.334**	0.005	0.001
age squared (/100)	**-0.192**	0.031		**-0.133**	0.031		**-0.154**	0.052		**-0.086**	0.032		**-0.409**	0.006	
married or cohabits	0.021	0.079	0.004	*-0.116*	0.082	-0.022	-0.022	0.102	-0.003	-0.050	0.061	-0.010	**-0.014**	0.020	-0.002
spouse employed	**0.301**	0.061	0.052	**0.614**	0.063	0.119	**0.580**	0.116	0.097	**0.491**	0.052	0.103	**0.276**	0.014	0.033
lone parent	0.088	0.228	0.015	0.003	0.252	0.001	*-0.367*	0.281	-0.051	0.155	0.212	0.032	**0.102**	0.046	0.012
# children under 3-years old	0.002	0.051	0.000	0.057	0.070	0.010	0.015	0.062	0.003	-0.013	0.043	-0.003	**0.138**	0.014	0.019
# children 3-6-years old	0.009	0.046	0.001	-0.029	0.059	-0.005	-0.007	0.055	-0.001	0.019	0.040	0.004	**0.063**	0.012	0.009
Lives in Southern Finland (Uusimaa)	**0.486**	0.145	0.083	**0.238**	0.131	0.045	**0.446**	0.139	0.067	**0.234**	0.096	0.049	**0.394**	0.032	0.045
Has a Finnish upper degree	**0.619**	0.151	0.102	**0.484**	0.155	0.091	**0.688**	0.146	0.115	**0.589**	0.100	0.122	**0.473**	0.021	0.057
Has a Finnish tertiary degree	**0.708**	0.201	0.116	-0.221	0.345	-0.042	0.337	0.346	0.054	-0.051	0.118	-0.011	**1.166**	0.037	0.112
Spouse has a upper degree	0.024	0.079	0.004	*0.110*	0.077	0.021	0.121	0.126	0.019	-0.058	0.065	-0.012	**0.116**	0.019	0.014
Spouse has a tertiary degree	**0.316**	0.113	0.054	0.002	0.111	0.000	*-0.399*	0.300	-0.055	0.100	0.113	0.021	**0.084**	0.039	0.010
Year of immigration:															
regional unemployment rate	**-0.031**	0.013	-0.015	**-0.057**	0.012	-0.004	0.001	0.013	-0.007	-0.010	0.010	-0.002			
has a Finnish spouse	**-0.645**	0.121	-0.107	**-0.569**	0.182	-0.106	-0.028	0.226	-0.004	**-0.793**	0.096	-0.163			
ρ	0.77			0.71			0.62			0.68			0.73		
Log-likelihood	-5 517			-4 842			-2 203			-6 113			-88 644		
Individuals	2 225			1 848			1 008			1 882			31 614		
Observations	12 931			10 321			6 550			12 449			300 385		

Year dummies, constant term and means of time-varying variables (excluding age) suppressed. Bold letters indicate statistical significance at a 5 % level, italics indicate statistical significance at a 10 % level. a Average marginal effect, see text. b form. Yugoslavia, Iran, Iraq, Somalia

Table 2b. Estimates, females

	OECD			*form. Soviet Union*			*Refugee countries* [b]			*Other*			*Natives*		
	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]	coeff.	std.err.	AME[a]
Year since migration (in comparision to one)															
2	**0.194**	0.109	0.033	**0.271**	0.065	0.039	**0.715**	0.279	0.031	**0.227**	0.086	0.036			
3	0.026	0.122	0.004	**0.449**	0.068	0.066	**0.968**	0.288	0.047	**0.229**	0.093	0.036			
4	-0.120	0.134	-0.020	**0.672**	0.071	0.104	**0.990**	0.294	0.048	**0.426**	0.098	0.070			
5	-0.036	0.145	-0.006	**0.890**	0.074	0.142	**1.474**	0.294	0.087	**0.476**	0.105	0.079			
6	-0.023	0.161	-0.004	**1.035**	0.076	0.169	**1.720**	0.303	0.111	**0.608**	0.111	0.104			
7	-0.102	0.171	-0.017	**1.079**	0.080	0.177	**1.800**	0.311	0.120	**0.754**	0.119	0.132			
8	-0.043	0.183	-0.007	**0.996**	0.085	0.161	**1.978**	0.326	0.140	**0.712**	0.127	0.124			
9	-0.135	0.193	-0.023	**0.987**	0.091	0.160	**1.828**	0.344	0.123	**0.824**	0.135	0.146			
10-12	*-0.246*	0.182	-0.041	**0.875**	0.095	0.139	**2.083**	0.370	0.153	**0.824**	0.133	0.146			
in Finland in 1989	-0.128	0.222	-0.022	**0.672**	0.149	0.104	**1.473**	0.522	0.087	**1.127**	0.176	0.208			
Observed characteristics															
age	**0.057**	0.034	0.002	**0.076**	0.020	-0.001	0.062	0.065	-0.003	0.036	0.028	-0.003	**0.305**	0.004	0.003
age squared (/100)	*-0.062*	0.044		**-0.115**	0.026		*-0.127*	0.087		**-0.079**	0.038		**-0.342**	0.005	
married or cohabits	-0.069	0.136	-0.012	-0.086	0.076	-0.015	*-0.354*	0.234	-0.031	**-0.254**	0.100	-0.047	**-0.068**	0.021	-0.010
spouse employed	**0.646**	0.097	0.112	**0.376**	0.046	0.065	*0.227*	0.163	0.020	**0.541**	0.070	0.102	**0.278**	0.014	0.041
lone parent	**0.563**	0.161	0.097	*0.118*	0.081	0.020	**-0.525**	0.296	-0.040	**-0.350**	0.125	-0.062	**0.094**	0.022	0.014
# children under 3-years old	**-0.796**	0.069	-0.132	**-0.888**	0.053	-0.149	**-0.761**	0.151	-0.122	**-0.785**	0.060	-0.158	**-0.759**	0.010	-0.119
# children 3-6-years old	**-0.299**	0.054	-0.049	**-0.289**	0.042	-0.049	**-0.301**	0.114	-0.048	**-0.464**	0.052	-0.093	**-0.288**	0.009	-0.045
Lives in Southern Finland (Uusimaa)	**0.659**	0.199	0.110	**0.324**	0.091	0.055	0.479	0.428	0.040	0.122	0.133	0.022	**0.499**	0.028	0.070
Has a Finnish upper degree	**0.494**	0.177	0.085	**0.524**	0.092	0.093	**1.091**	0.277	0.118	**0.498**	0.150	0.097	**0.598**	0.017	0.090
Has a Finnish tertiary degree	**0.791**	0.240	0.136	**1.043**	0.201	0.194	*0.825*	0.559	0.085	**0.393**	0.201	0.076	**1.337**	0.032	0.157
Spouse has a upper degree	**0.257**	0.116	0.044	*0.080*	0.058	0.014	**0.549**	0.194	0.051	-0.051	0.087	-0.009	**0.030**	0.018	0.004
Spouse has a tertiary degree	**0.264**	0.141	0.045	**0.424**	0.102	0.075	0.363	0.360	0.033	-0.151	0.121	-0.027	**-0.073**	0.032	-0.011
Year of immigration:															
regional unemployment rate	**-0.093**	0.018	-0.015	**-0.024**	0.009	-0.004	**-0.044**	0.020	-0.007	-0.011	0.012	-0.002			
has a Finnish spouse	**0.488**	0.154	0.084	**-0.271**	0.075	-0.045	**1.077**	0.587	0.117	-0.092	0.103	-0.017			
ρ	0.76			0.68			0.64			0.64			0.73		
Log-likelihood	-2 934			-8 011			-725			-3 786			-114 887		
Individuals	1 197			3 218			731			1 517			32 465		
Observations	6 918			19 655			4 088			8 695			322 372		

Year dummies, constant term and means of time-varying variables (excluding age) suppressed. Bold letters indicate statistical significance at a 5 % level, italics indicate statistical significance at a 10 % level. a Average marginal effect, see text. b form. Yugoslavia, Iran, Iraq, Somalia

Table 3. Cohort effect on years-since-migration estimates

	OECD		*form. Soviet Union*		*Refugee countries*		*Other*	
	1991 - 1994	Full Sample	1991 - 1994	Full Sample	1991 - 1994	Full Sample	1991 - 1994	Full Sample
Year since migration (in comparision to one)								
2	-0.018	**0.260**	**0.728**	**0.228**	**0.621**	**0.489**	**0.549**	**0.251**
	0.165	0.061	0.104	0.049	0.279	0.129	0.130	0.054
3	**-0.534**	**0.151**	**1.187**	**0.428**	**0.940**	**0.827**	**0.629**	**0.308**
	0.229	0.067	0.143	0.053	0.313	0.131	0.174	0.058
4	**-0.899**	0.074	**1.554**	**0.614**	**1.028**	**0.900**	**0.874**	**0.429**
	0.292	0.073	0.180	0.057	0.374	0.138	0.220	0.062
5	**-1.059**	-0.009	**1.826**	**0.779**	**1.521**	**1.329**	**0.966**	**0.472**
	0.350	0.080	0.216	0.062	0.428	0.146	0.264	0.066
6	**-1.200**	0.072	**2.012**	**0.878**	**1.669**	**1.405**	**1.151**	**0.522**
	0.412	0.087	0.253	0.067	0.487	0.157	0.309	0.070
7	**-1.294**	0.089	**2.093**	**0.879**	**1.734**	**1.456**	**1.391**	**0.666**
	0.479	0.095	0.292	0.073	0.548	0.173	0.356	0.075
8	**-1.439**	0.126	**2.077**	**0.785**	**1.989**	**1.644**	**1.468**	**0.622**
	0.546	0.103	0.331	0.080	0.614	0.190	0.404	0.080
9	**-1.652**	0.137	**2.118**	**0.727**	**1.956**	**1.593**	**1.608**	**0.689**
	0.619	0.112	0.371	0.088	0.674	0.208	0.453	0.086
10-12	**-1.788**	**0.208**	**2.149**	**0.590**	**2.152**	**1.781**	**1.745**	**0.709**
	0.710	0.107	0.427	0.096	0.776	0.235	0.522	0.088
ρ	0.72	0.76	0.69	0.70	0.61	0.62	0.62	0.66
Log-likelihood	-2 330	-8 582	-7 570	-12 874	-1 948	-2 969	-4 138	-10 059
Individuals	797	3 422	2 388	5 058	933	1 739	1 144	3 399
Observations	5 100	19 849	17 742	29 676	7 088	10 638	8 706	21 144

Controls suppressed, see table 2. Bold letters indicate statistical significance at a 5 % level, italics indicate statistical significance at a 10 % level. Refugee countries: Yugoslavia, Iran, Iraq, Somalia