

# **The Rise and Fall of Immigrant Employment: A Lifecycle Study of Labor Migrants to Norway**

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July 14, 2006

\*We are grateful to George Borjas and Morten Johansen for helpful comments and to Statistics Norway for provision of data that have been crucial for completion of this research. The research has received financial support from the Ministry of Labour and Social Inclusion and the Ministry of Finance (Frisch project #1391) and the World Bank Research Program on International Migration and Development.

### **Abstract**

We find that the lifecycle employment profiles of nonwestern male labor migrants that came to Norway in the early 1970s diverge significantly from those of native comparison persons. During the first years after arrival almost all of the immigrants worked and their employment rate exceeded that of natives. But, about ten years upon arrival, immigrant employment started a sharp and steady decline. By 2000, the immigrant employment rate was 50 percent, compared to 87 percent for the native comparison group. That year, as many as 74 percent of the non-employed immigrants received a permanent disability pension and an additional 16 percent received another form of social security transfer. We identify considerable disincentives embedded in the social security system that may be responsible for the poor lifecycle employment performance of the immigrant cohort. But we also uncover evidence that labor immigrants are particularly vulnerable to the state of the economy and face a high probability of permanent exit from the labor market during economic downturns.

## 1. Introduction

With the aging of their native population, many developed nations are approaching a ‘demographic deficit’ with soaring dependency ratios. Most of these nations have, at some point over the past four decades, adopted legislation that restricts immigration flows from developing countries. Given the large pool of potential foreign labor, a possible policy response to the problem of an aging population is to ease immigration restrictions and admit more labor migrants from less developed countries. As shown by Storesletten (2000; 2003), immigration has the promise of mitigating the fiscal burden associated with aging populations both in the United States and in Europe.<sup>1</sup> These prospects hinge, however, crucially on how immigrants fare in the labor market and, in particular, on their expected labor market participation rates. By requiring labor migrants to be employed upon arrival, the host country can of course ensure very high participation rates to start with. But, the impact of immigration on the overall fiscal conditions clearly depends on the long-term employment patterns of labor immigrants as well as their families.

Studies from Europe, North America, and Australia find that immigrants often assimilate into the host country’s labor market, and that, e.g., earnings gaps between immigrants and natives narrow with the number of years since migration (Chiswick, 1978; Borjas, 1999; Bauer *et al.*, 2000).<sup>2</sup> There are important differences across host countries, however, with respect to the selection of immigrants, the presence of xenophobia and discriminatory practices, and lifetime work incentives facing immigrants. Hence, empirical findings regarding the assimilation process of immigrants may not be directly transferable across different countries. In the welfare state economies of Western Europe, one could

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<sup>1</sup> The potential gains from international migration are also illustrated by Boeri and Brückner (2005), who estimate that east-to-west migration within the European Union following EU enlargement will raise EU GDP.

<sup>2</sup> Recent studies of immigrant earnings assimilation in the Scandinavian countries include Edin *et al.* (2000) for Sweden, Husted *et al.* (2000) for Denmark, and Barth *et al.* (2004) for Norway. The evidence from these studies indicates significant assimilation effects among immigrants in general, but also that the assimilation process varies importantly according to arrival cohort, country of origin, and immigrant status.

speculate that a more open-border immigration policy may result in a mix of immigrants that adds to the fiscal challenges rather than alleviating them. Countries with an egalitarian wage structure might be considered a more attractive destination for low-skilled than for high-skilled immigrants (Borjas, 1987). And countries with generous and costly social security systems might be considered more attractive for individuals who foresee a high probability of becoming dependent on the social security system than for individuals who expect to have to pay for it (Borjas and Trejo, 1993). Hence, the structural characteristics of European labor markets and social security systems entail the risk of attracting immigrants with weak employment prospects. Moreover, cultural conflict and discriminatory behavior may prevent efficient utilization of foreign labor.

As legal restrictions have limited immigration flows from less advanced countries to Western Europe, there has been little scope for empirical evaluation of assimilation processes of *labor migrants* from developing nations. Over recent decades, nonwestern immigrants have typically entered as part of a family reunification process or seeking political asylum, and those admitted with a work permit have belonged to a highly selected group (that has been allowed to circumvent strict immigration rules). At the same time, there have been substantial flows of labor migration between advanced countries. Empirical evidence from a number of European host countries indicates substantial differences in the labor market status of immigrants from developed and less developed countries. OECD (2001), for example, uses data from 18 European countries to study the likelihood of economic inactivity and the (conditional) probability of employment, and finds that foreign nationals, and in particular those from outside the European Union, have substantially poorer outcomes than natives in almost all countries considered. (The exceptions tend to be countries in Southern Europe, specifically Greece, Italy, and Spain.) The variation in economic status is likely reflected in differences in welfare dependency rates; in an otherwise scant literature, Hansen and

Lofstrom (2003) and Riphahn (2004) show that immigrant groups originating in nonwestern countries are more likely to collect social assistance than other immigrants and natives in Sweden and Germany. It remains unclear, however, whether the nativity and country-of-origin differences in employment status merely relate to the fact that many immigrants from nonwestern countries came for reasons of political persecution or family reunification, and not primarily for the purpose of seeking work. Along the same lines, the experiences of immigrants admitted over the past decades on the grounds of family reunification or political asylum may not be representative for the new immigrants that will enter if restrictions on labor immigration were eased.

In the present paper, we follow a wave of ‘regular’ labor migrants that arrived in Norway from less-developed countries during the period 1971 to 1975, just before Norway imposed a general ban on immigration from outside the Nordic countries. Based on access to administrative registers, we trace the employment histories of these immigrants over the entire period from the date of entry until year 2000; hence we are able to construct employment profiles for up to 30 years upon arrival. For the last third of the observation period, we can also study participation in public welfare programs. The labor market outcomes and assimilation process of this group of workers is of particular relevance for public policy. If the underlying migration motive determines labor market success in the host country, the long-run experience of this wave of labor migrants conveys valuable information about the expected labor market behavior of would-be immigrants were borders to be reopened.

Our main findings are rather dismaying. Focusing on male immigrants from the four largest nonwestern countries of origin during the relevant period (Pakistan, Turkey, India, and Morocco), we find that labor market participation was very high during the first ten years upon arrival, with employment rates above 95 percent and exceeding those of a native comparison group (matched on age and education). After ten years, however, employment

among the labor migrants declined sharply. And by 2000, almost three decades after immigration, only 50 percent of the labor migrants were still in employment, compared to 87 percent of the native comparison group. The great majority of the labor migrants under study were later joined by a spouse from the source country. The long-term labor market outcomes of the spouses are even less favorable than their husbands'. For example, their employment rate never exceeded 40 percent, and by 2000, it had declined to 30 percent, compared to around 80 percent for the spouses of the native control group. A natural question to ask is what happened to the labor immigrants (and their spouses) after they left the labor market. The answer is that most of them claimed various types of social security benefits. In 2000, we find that around 74 percent of the non-employed labor migrants (and 28 percent of their non-employed spouses) received a permanent disability benefit. More than 90 percent of the non-employed labor immigrants received at least one type of social security transfer during 2000.

The paper examines the dynamic process by which immigrants and natives become non-employed, in terms of *incidence* and *persistence*. It also discusses alternative explanations behind the dismal long-term employment performance of labor immigrants. We first demonstrate that our findings are real, in the sense that they cannot be explained away by data problems related to, e.g., non-observed return migration. We then investigate whether the results could be driven by systematic differences in the composition of occupations and industries by immigrant status, or by difficulties in utilizing education from the country of origin in the host country. In the latter case, it could be argued that a native comparison group matched on formal education is inappropriate. We do not find evidence in favor of such explanations, however. Restricting the analysis to production workers in the manufacturing industries does not change the results. And even when we compare the group of all immigrants to a native control group composed of individuals with compulsory education *only*, a negative 30 percentage point 'underemployment' of immigrants remains in year 2000.

We conclude that the explanations are likely to be found in the combination of inadequate work incentives and in the strong cyclical demand for immigrant labor.

The next section provides a description of our data and gives a brief empirical overview of employment patterns. Section 3 presents the statistical tool used to analyze non-employment incidence and persistence, as functions of age, years since migration, and local labor market tightness. Section 4 presents the results from the empirical analysis and Section 5 discusses potential explanations. Section 6 concludes.

## **2. Data and empirical overview**

The empirical analyses are based on data samples assembled from administrative registers covering the complete immigrant and native populations of Norway in 2000. Immigrant status is defined by country of birth and year of arrival. Foreign-born individuals with Norwegian-born parents and Norwegian-borns with immigrant parents are excluded from the samples. Our aim is to study lifecycle employment of adult, employment-oriented immigrants from nonwestern countries. This motivates our extract of immigrants born between 1936 and 1955 who entered Norway between 1971 and 1975 from one of the following four countries: Pakistan, Turkey, India, and Morocco. These four countries account for 81.2 percent of the non-European males in the relevant birth and entry cohorts. Relatively few labor migrants from nonwestern countries arrived before 1971 (Bratsberg et al., 2006b). And around 1975, Norway introduced a temporary moratorium on immigration that was followed by legislation favoring immigration based on family reunification and political asylum rather than employment. Moreover, during the late 1960s and early 1970s Norwegian industry experienced shortages in domestic labor markets and actively recruited workers from

developing countries.<sup>3</sup> As employment was not likely the prime migration motive for female immigrants that arrived in the early 1970s, we focus on men. (The outcomes of their spouses are, however, discussed towards the end of the paper.) Accordingly, the analysis samples track employment of male immigrants between 1971 and 2000.<sup>4</sup>

Our employment data draw on individual histories of accumulation of credit points (“pensjonspoeng”) in the Norwegian public pension system (“Folketrygden”). Earned pension credit points in a given year are tied to the individual’s earnings that year. In principle, all labor-related earnings constitute the basis for calculation of credits, including wage and salary incomes, self-employment earnings, unemployment benefits, long-term sick leave benefits, and maternity leave allowances.<sup>5</sup> Specifically, credit points are computed from total annual earnings (“pensjonsgivende inntekt”) and the social security base figure,  $G$  (“Grunnbeløpet i Folketrygden,” which equaled NOK 49,090, about € 6,100, in 2000). Individuals receive no credits unless their earnings are at least  $I G$  and we define an individual as being employed during the year if he earned at least some credits that year, i.e., had annual earnings of at least  $I G$ .

To make the native-born reference group comparable to the cohort of labor migrants, we stratify the native sample so as to match the distributions of birth year and educational attainment (i.e., years of schooling) in the immigrant sample. In Table 1, we list means of key variables in the immigrant and native samples. About 65 percent of the sample was born between 1946 and 1955 (i.e., they were less than 54 years of age in 2000). Pakistani natives

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<sup>3</sup> Interestingly, the immigrant wave of the early 1970s was spurred by restrictions on labor immigration imposed elsewhere in Europe and, in particular, by the strict immigration policies introduced in Denmark in November 1970 (Bauer et al., 2000; Tjelmeland and Brochmann, 2003). For the immigrant cohort under study, admission required prior issuance of a work permit.

<sup>4</sup> A consequence of such data focus is that we can track individual employment for a maximum of 30 years after arrival. Because the mean age of arrival in the immigrant sample is 25, we typically plot “lifecycle” profiles between the ages of 25 and 54. Note also that we do not consider employment patterns of those who return migrate before 2000. Prior studies indicate high return migration rates among OECD immigrants and low return rates among those from outside the OECD area (Bratsberg et al, 2006b). See also below.

<sup>5</sup> Old-age and disability pensions, capital gains, interest income, etc., are not counted as ‘earnings’ that qualify for a status as employed.



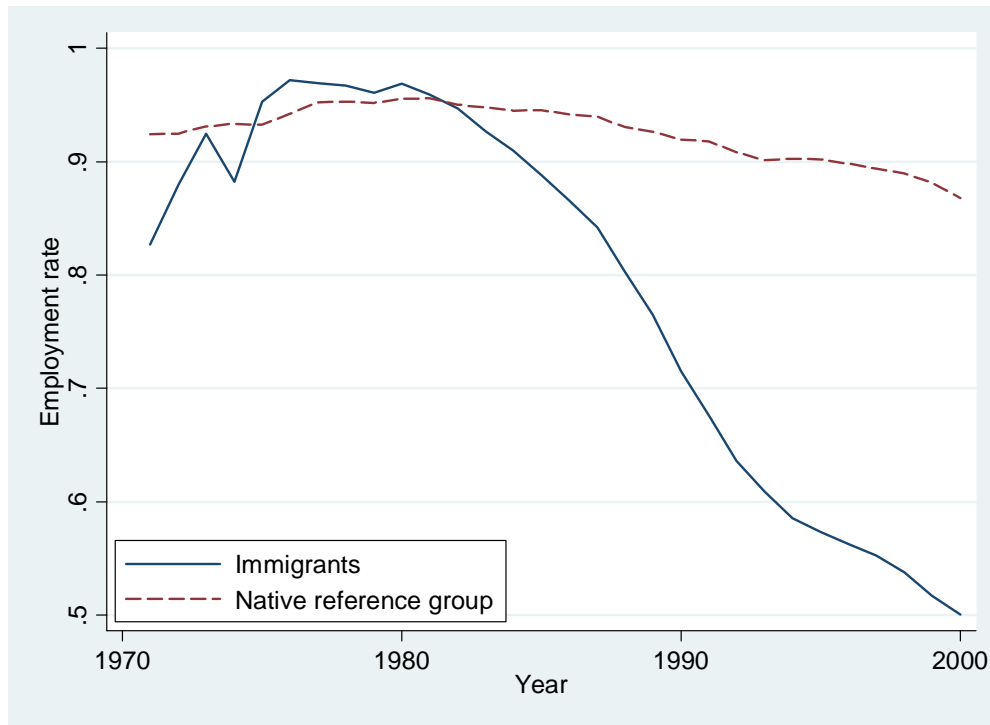
**Table 1: Descriptive statistics**

	Immigrants from Pakistan, Turkey, India and Morocco, arrived 1971-75	Matched group of Norwegian born
<i>Birth cohorts</i>		
1936-40	0.123	0.113
1941-45	0.227	0.222
1946-50	0.390	0.404
1951-55	0.260	0.261
<i>Country of birth</i>		
Pakistan	0.646	
Turkey	0.155	
India	0.134	
Morocco	0.065	
<i>Year of arrival in Norway</i>		
1971	0.354	
1972	0.119	
1973	0.131	
1974	0.220	
1975	0.176	
<i>Educational attainment</i>		
Not available	0.146	0.004
Less than 10 years	0.309	0.345
10-11 years	0.227	0.275
12 years	0.109	0.126
13-15 years	0.079	0.094
16+ years	0.130	0.156
<i>Marital status</i>		
Married	0.955	0.880
Married to an immigrant (among those with wife identified in Norwegian registers)	0.938	0.032
Observations	2,553	28,720

Note: The native reference group is matched on the basis of birth year and educational attainment. The higher proportions in various education brackets for natives reflect a lower fraction with missing values recorded in the education register.

make up about two thirds of the cohort, followed by immigrants from Turkey and India (both around 15 percent), and finally immigrants from Morocco with 6.5 percent. Close to one half of the immigrants arrived in 1971 or 1972. Unfortunately, information on educational attainment is missing for about 15 percent of the immigrant sample. Very few of the immigrants are single (not married) and close to 94 percent of the married males have an immigrant spouse compared to 3.2 percent among native Norwegians. Not reported in the table, the median year of arrival for the immigrant wife is six years after the husband (with the mode difference in arrival being four years).

**Figure 1: Trends in employment 1971-2000, male immigrants from Pakistan, Turkey, India, and Morocco, born 1936-1955 and arrived in Norway 1971-75, and native reference group.**



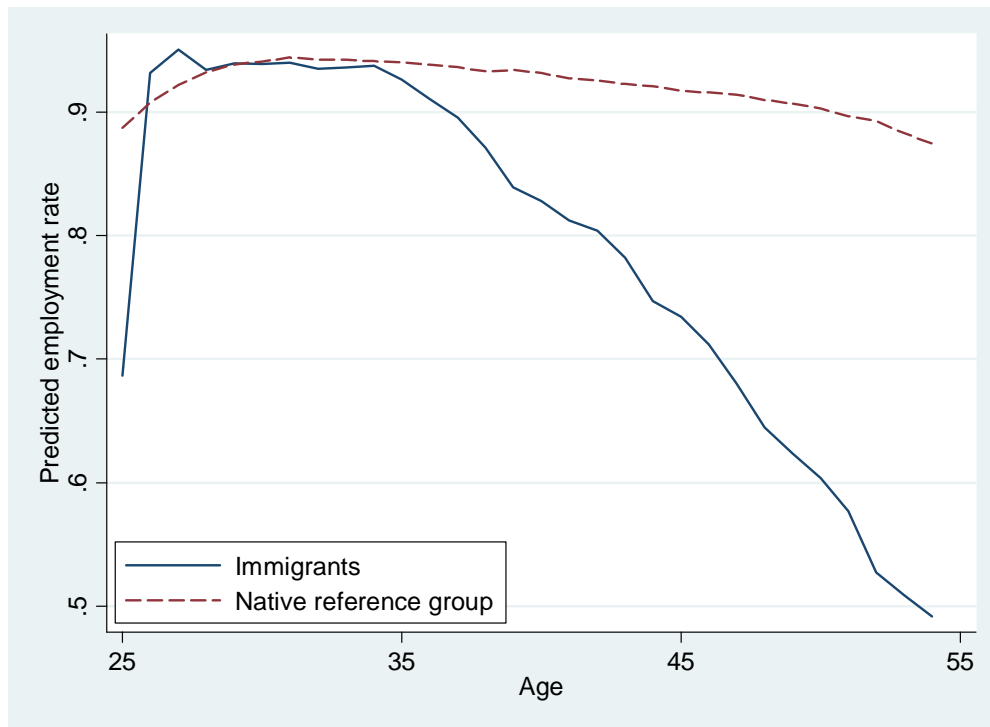
Note: Sample sizes are 2553 immigrants and 28,720 natives.

In Figure 1, we plot the employment shares of the labor migrant and native reference samples by calendar year over the 30 year period. During the early 1970s employment of immigrants caught up with the level of natives. More than 95 percent of the labor migrant group held employment each year during the late 1970s and early 1980s, and in this period their employment rate was even higher than that of natives. Around 1982-83, the employment share in the immigrant group starts a steady decline and falls to 50 percent in 2000.

The employment rate in the native reference group also starts a slow decline about the same time, but the slope is much smaller with about 87 percent of the native group employed in 2000.

The cohort of labor migrants under study arrived in Norway between 1971 and 1975 and compositional effects may therefore give rise to the jagged pattern during the early

**Figure 2: Predicted employment profiles for immigrants and natives**



Note: Estimates are based on samples consisting of 68,220 observations of 2553 immigrants and 786,288 observations of 28,720 natives.

calendar years in Figure 1. Based on a linear employment probability model with age, years since migration, educational attainment, region of residence, and the unemployment rate in the local labor market as controls, we plot the predicted employment probability using arrival in Norway at age 25 in Figure 2.<sup>6</sup> As such, ‘age 35’ reflects both the age of the migrant *and* 10 years since arrival in Norway. Except for the year of arrival (age 25), the predicted employment probabilities are remarkably similar for immigrants and natives for about ten years. From age 36 onwards the two groups diverge and the native-immigrant employment

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<sup>6</sup> Coefficient estimates are presented in Appendix Table A1. To account for within-individual correlation of observations, the model is estimated with individual random effects. Note that because we track one immigrant cohort over time, the synthetic panel methodology of Borjas (1999) is not appropriate for our application. Hence, immigrant and native profiles are estimated separately. In sensitivity analyses, we pooled the two samples and used the native group to identify period effects. Even though separating aging and period effects is difficult in the native sample, the experiment generated profiles similar to those in Figure 2. Note also that we include local

differential is monotonically increasing with age. At age 54, the difference is huge, close to 40 percentage points.

### 3. Empirical Methodology

Why does the employment rate of labor migrants decline so rapidly compared to that of natives? In this section, we set up a statistical model aimed at investigating how employment propensity depends on age, education, local labor market conditions, and, for immigrants, years since migration. A key feature of the model is that it makes it possible to disentangle the difference between natives' and immigrants' non-employment propensities into differences in *incidence*, on the one hand, and differences in *persistence*, on the other. The model specifies yearly transitions between the states of employment and non-employment as Markov processes, affected by observed and unobserved individual characteristics and local labor market conditions. The transitions are assumed to be governed by logistic probability functions. Let  $y_{jt}=1$  if individual  $j$  was employed in year  $t$ , and zero otherwise. Let  $l(\cdot)$  be a logistic probability function, i.e.,  $l(a) \equiv \exp(a)/(1 + \exp(a))$ . The transition probabilities for immigrants are then modeled as:

$$\begin{aligned} P(y_{jt} = 0 | y_{jt-1} = 1) &= l(\alpha_i^1 AGE_{jt} + \beta_i^1 YSM_{jt} + \gamma_i^1 REG_{jt} + \delta_i^1 EDUC_j + \phi_i^1 u_{jt} + v_j^1), \\ P(y_{jt} = 1 | y_{jt-1} = 0) &= l(\alpha_i^2 AGE_{jt} + \beta_i^2 YSM_{jt} + \gamma_i^2 REG_{jt} + \delta_i^2 EDUC_j + \phi_i^2 u_{jt} + v_j^2), \end{aligned} \quad (1)$$

where  $AGE_{jt}$  is a full set of age dummy variables (26,27,...,64);  $YSM_{jt}$  denotes a full set of years since migration dummy variables (2,3,...,29);  $REG_{jt}$  is a set of dummy variables for (seven) regions in Norway;  $EDUC_j$  is a set of dummy variables indicating years of education ( $\leq 9$ , 10-11, 12, 13-15,  $\geq 16$ , missing); and  $u_{jt}$  depicts the rate of local unemployment relevant for individual  $j$ . All these variables (except for educational attainment) are time-varying. In

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unemployment in the regression model, allowing for differential responsiveness of immigrants and natives to

addition, each individual is characterized by the unobserved time-invariant covariates  $(v_j^1, v_j^2)$ .

For natives, the transition probabilities are modeled as

$$\begin{aligned} P(y_{jt} = 0 | y_{jt-1} = 1) &= l(\alpha_n^1 AGE_{jt} + \gamma_n^1 REG_{jt} + \delta_n^1 EDUC_j + \varphi_n^1 u_{jt} + v_j^1), \\ P(y_{jt} = 1 | y_{jt-1} = 0) &= l(\alpha_n^2 AGE_{jt} + \gamma_n^2 REG_{jt} + \delta_n^2 EDUC_j + \varphi_n^2 u_{jt} + v_j^2), \end{aligned} \quad (2)$$

The likelihood of observing a particular sequence of outcomes for individual  $j$  is given as:

$$L_j(v_j^1, v_j^2) = \prod_t \left\{ \begin{aligned} & y_{jt-1} \left[ \left( P(y_{jt} = 0 | y_{jt-1} = 1) \right)^{1-y_{jt}} \left( 1 - P(y_{jt} = 0 | y_{jt-1} = 1) \right)^{y_{jt}} \right] \\ & \times (1 - y_{jt-1}) \left[ \left( P(y_{jt} = 1 | y_{jt-1} = 0) \right)^{y_{jt}} \left( 1 - P(y_{jt} = 0 | y_{jt-1} = 0) \right)^{1-y_{jt}} \right] \end{aligned} \right\}. \quad (3)$$

As Equation (3) contains unobserved characteristics it cannot be used directly in a data likelihood function. Instead, we take the expectation of individual likelihood contributions. In order to avoid unjustified distributional assumptions, we rely on the non-parametric maximum likelihood estimator (NPMLE); see Lindsay (1983) and Heckman and Singer (1984). This implies that the joint distribution of unobserved heterogeneity is modeled by means of a discrete distribution with an a priori unknown number of support points. For  $Q$  support points, the data likelihood functions take the form

$$L(Q) = \prod_{j=1}^N \sum_{q=1}^Q p_q L_j(v_q^1, v_q^2), \quad \sum_{q=1}^Q p_q = 1, \quad (4)$$

where  $(v_q^1, v_q^2)$  is the location vector of support point  $q$ , and  $p_q$  is the associated probability.

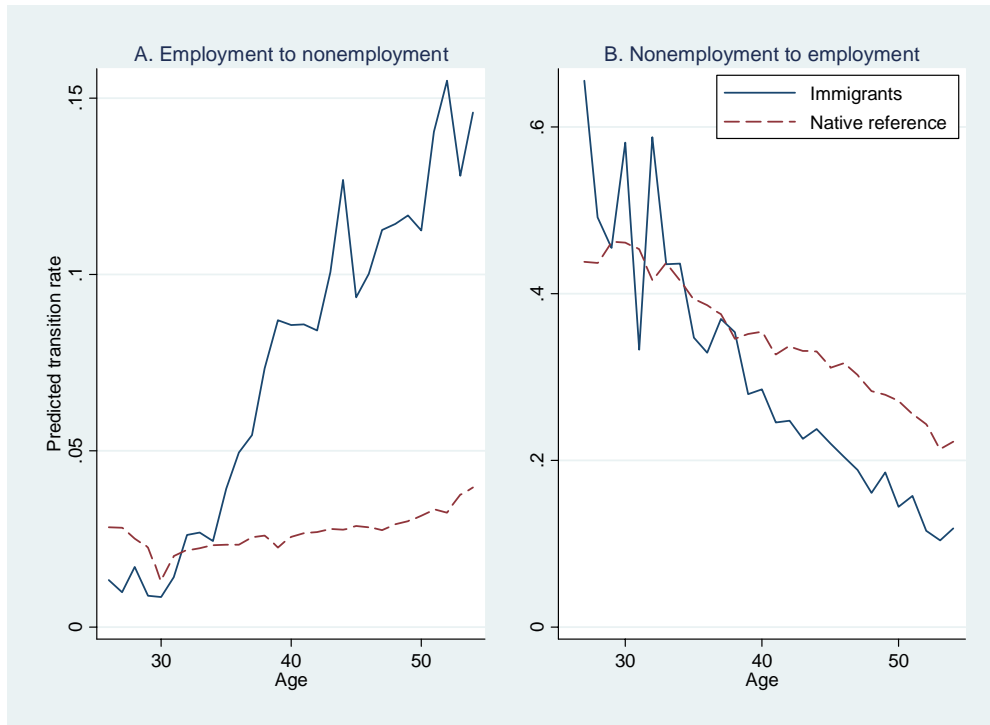
We first maximize (4) with respect to all the parameters of the model for  $Q=1$  (no unobserved heterogeneity). We then add support points, one by one, and re-estimate the model as long as we are able to obtain an improvement in the likelihood function. Our computational strategy follows the procedure outlined in Gaure *et al.* (2005).

The model is estimated separately for immigrants and natives. The initial condition is that of employment during the first year, hence we omit from the analysis samples any years

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economic fluctuations (see Bratsberg *et al.*, 2006a).

**Figure 3: Movement out of and into employment, by immigrant status and age**



Note: Estimates are based on samples of 66,614 observations of 2553 immigrants and 765,936 observations of 28,669 natives.

of non-employment at the upstart of the career. Samples are further restricted to those aged 25 to 64, i.e., we can study transitions from employment to non-employment for ages 26 to 64, and from non-employment to employment for ages 27 to 64. For immigrants, NPMLE required 9 support points in the joint heterogeneity distribution, while for natives, it required 12 support points.

## 4. Empirical Analysis

### 4.1 Employment dynamics and decomposition of employment rate differentials

The empirical estimates of the model are displayed in Figure 3 (parameter estimates with standard errors are provided in Appendix Table A2). The average transition rates out of and into employment, by age, are based on the mean of observed characteristics and their

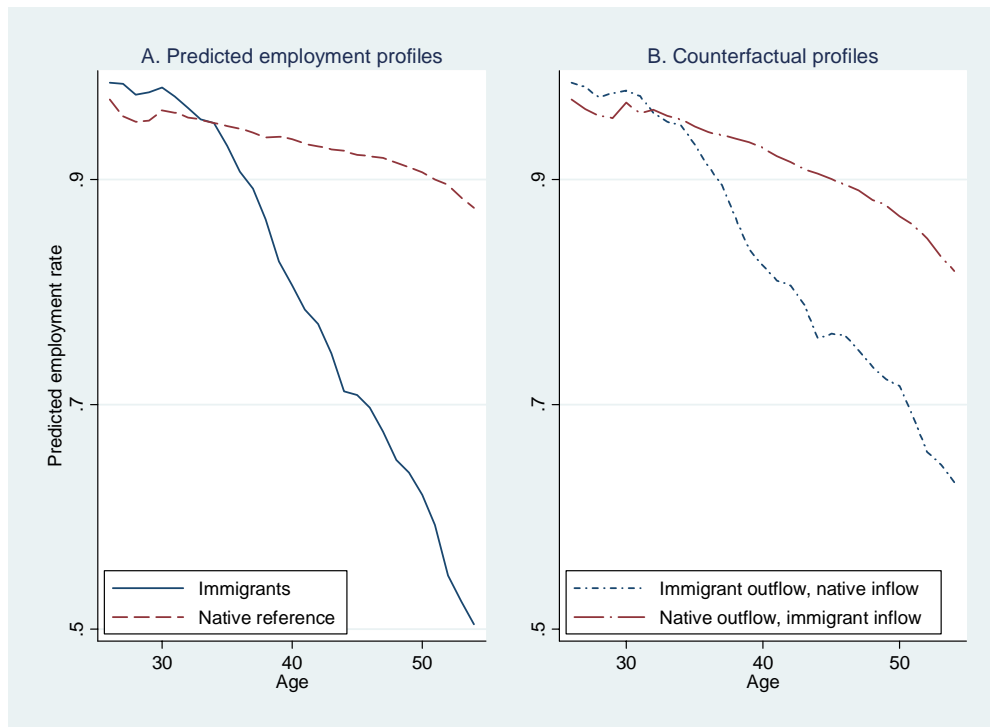
respective coefficients. The unobserved heterogeneity is handled by the estimated constants (the  $v$ 's) for each of the 'unobserved types' (e.g. mass points) as well as the proportion of the individuals belonging to each group. The average transition rate (in or out) at a given age is calculated as the weighted average over the 'types'.

As the figure shows, immigrants and natives experience fairly similar transition patterns during early years, up to age 35, although with some non-systematic year-to-year variation in the transition rates. The estimated outflow rates in this period (displayed in panel A) vary between 1 and 2.5 percent per year. The employment-return probabilities for those out of employment are fairly high, close to 50 percent up to age 35 (see panel B). In other words, about half of the persons who moved out of employment in a given year, moved back into employment the following year. The outflow rate among immigrants shoots off from about age 34 and the probability of leaving employment rises rapidly as immigrants age. Except for a few peaks, the predicted outflow rate in panel A is unambiguous rising and reaches a level close to 15 percent per year when immigrants enter their 50s. For natives, the outflow rate also increases with age, but the gradient is fairly flat. By age 51, the predicted outflow rate is 3.3 percent for natives, compared to 14.0 percent for the cohort of labor migrants.

For immigrants, the rise in outflow from employment goes hand in hand with a steady drop in inflow rates, also starting at around age 35. While yearly fluctuations are larger among (the smaller group of) immigrants, natives have a similar profile up to their late 30s. As panel B reveals, at older ages, inflow rates are substantially lower for immigrants than for natives. However, the relative difference between natives and immigrants are considerably smaller for inflow rates than for outflow rates.

Returning to the lifecycle differences in employment rates displayed in Figure 2 (and Figure 1), we note that a stock at age  $a$  equals to the stock at age  $a-1$  plus inflow minus

**Figure 4: Predicted and counterfactual employment profiles**



outflow between ages  $a-1$  and  $a$ . A declining stock simply reflects that outflow (in units, not rates!) exceeds the inflow. Consequently, a differential change in the stock of employment across groups can be due to differences in inflow rates, outflow rates, or both. Eyeballing based on Figure 3 suggests that the difference in outflow rates is the more plausible explanation of the patterns observed in the prior section.

A direct decomposition approach is taken in Figure 4. As a benchmark, panel A displays the simulated employment probabilities for each year based on estimated transition rates and the evolving stocks of employed. The predicted employment rates are calculated separately for immigrants and natives. We start out at age 25, assuming that everyone is employed. Then, estimated transition probabilities are used to compute a stock (i.e., employment rate) at age 26. Transitions into and out of employment is then estimated by



means of the parameters of the model and the stock employed (and thereby also the non-employed). Repeating this procedure for each age provides the predicted employment shares up to age 54.

Employment is much more persistent than non-employment, especially during early years of the career. The majority is employed, both among immigrants and natives. Hence, it is far from trivial to give an analytically informative “decomposition” of the difference in employment share between natives and immigrants. Panel B in Figure 4 offers an answer to the question whether the native-immigrant employment differential is mainly due to higher outflow or lower inflow rates. The long-dotted line displays the counterfactual employment profile among immigrants if they had outflow rates from employment like natives, but their own realized inflow (i.e., return to employment) transition rates. This counterfactual can be compared with realized employment for both natives and immigrants. We would easily conclude that the immigrant employment profile was similar to that of natives, except for a somewhat larger drop after about age 40. Compared to the realized immigrant profile, immigrants would do dramatically better if they held the outflow rates of natives. Another angle on the same issue is taken by the short-dotted line in Panel B which displays the counterfactual immigrant profile replacing the realized inflow rates with those of natives. This counterfactual is actually different from the realized employment profile as the employment rate among immigrants at age 54 is estimated to 0.63 (in panel B) instead of 0.50 (in panel A). This suggests that about one third of the difference in employment rates among natives and immigrants at age 54 (equal to  $0.88 - 0.50 = 0.38$ ) can be attributed to differential inflow rates and two thirds to the higher probability of leaving employment for immigrants.

**Table 2: 2000 Rates of Unemployment Incidence, Rehabilitation, Disability Pension, and Social Assistance; Males Aged 45 to 64**

	Immigrants from Pakistan, Turkey, India and Morocco, arrived 1971-75			Matched group of natives		
	All	Non-employed	Employed	All	Non-employed	Employed
Unemployment	.124	.112	.136	.080	.079	.080
Long-term sick leave	.176	.007	.344	.160	.010	.183
Rehabilitation	.083	.097	.068	.036	.086	.028
Social assistance	.115	.181	.049	.028	.121	.014
Disability pension	.444	.737	.152	.156	.703	.072
Unemployment or transfer	.734	.901	.567	.370	.823	.301
Early retirement	.003	.005	.002	.010	.027	.008
Children	.943	.936	.951	.849	.725	.868
Married	.955	.938	.972	.880	.751	.899
In data or married	.991	.982	1	.996	.971	1
Observations	2,553	1,275	1,278	28,720	3,785	24,935
Percent of sample	100.0	49.9	50.1	100.0	13.2	86.8

#### **4.2 Where have all the (previously) employed immigrants gone?**

Underlying our micro data base, various administrative registers provide information on welfare and insurance transfers as well as public program participation during the 1992-2000 period. To examine the labor market attachment of immigrants who are not employed, we next describe patterns of registered unemployment, disability pensions, and transfers such as social assistance in 2000. Besides providing insights into immigrant and native use of public transfer programs, the exercise of checking whether or not those who did not earn any pension credit points appear in other data registers eliminates non-registration of earnings and unregistered return migration as explanations for the low employment rates observed for the cohort of labor immigrants in 2000.

First, though, we briefly describe the terms used in Table 2 that reports the fractions of the immigrant and native samples that were registered unemployed and/or transfer recipients

in 2000. *Unemployment incidence* is defined as appearing at least once in the end-of-month unemployment registers during the year. Included in the unemployment data are those registered at employment agencies as full-time or part-time unemployed, as well as participants in active labor market programs. Those with prior work experience are entitled to unemployment insurance benefits that also count as earnings qualifying for pension credits. Thus, some persons classified as employed in our analyses can in fact be unemployed (in principle even throughout the whole year). Indeed, Table 2 reveals that registered unemployment in 2000 is slightly more common among those classified as employed compared to the non-employed, both for immigrants and natives. Unemployment benefits are typically set at 62.4 percent of prior (pre-tax) earnings, but child supplements will raise the benefit replacement ratio for those with dependent children. *Long-term sick leave* reflects that the person received state sick leave benefits ('sykepenger fra Folketrygden') in 2000, i.e., collected benefits during eligible medical leaves that exceeded sixteen working days. Only those with a job are entitled to this transfer, explaining the lack of long-term sick leaves among those non-employed in Table 2. *Rehabilitation* means that the person received cash transfers related to vocational or medical rehabilitation ('attførings- eller rehabiliteringspenger') during 2000. The aim of these programs is to bring workers with reduced work capabilities back to ordinary employment, but many participants end instead up as permanent disability pension recipients. *Disability pension* ('uførepensjon') covers those receiving a permanent disability pension in 2000, unconditional on degree of disability. Entitlement to a permanent disability pension is subject to a medical test, but there are strong indications that the disability pension program commonly was used as an exit route to early retirement during the recession of the early 1990s (Bratberg et al., 2004; Dahl et al., 2000).

*Social assistance* captures whether or not the person received means-tested support in form of a cash transfer or a cash loan (‘økonomisk sosialhjelp’) during 2000.<sup>7</sup>

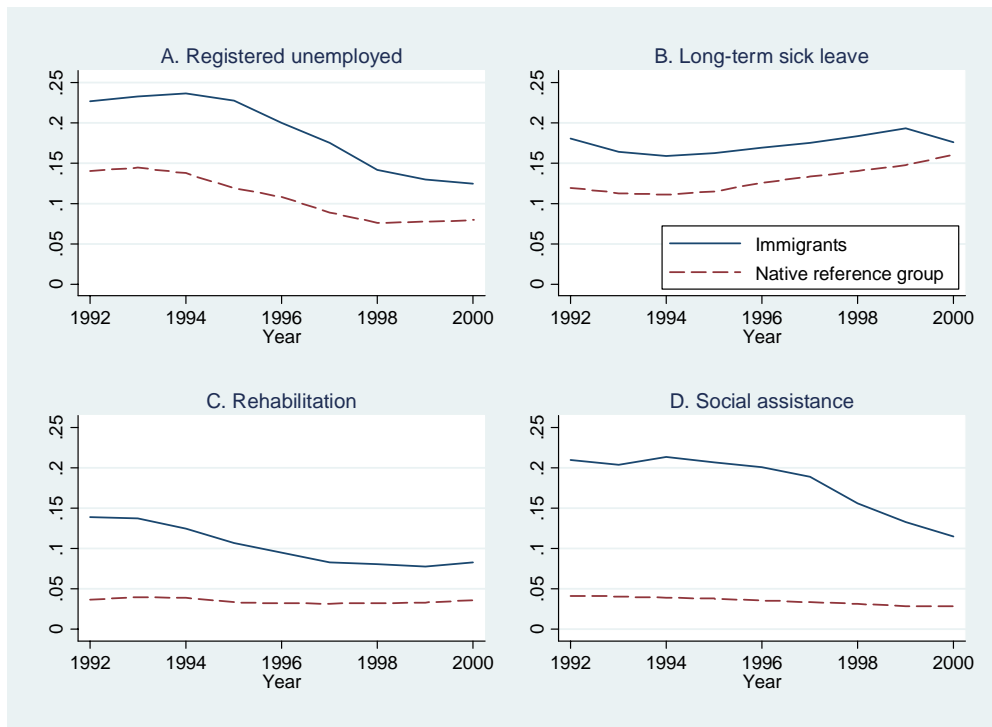
In 2000, the immigrant cohort was more likely to experience unemployment or receive a welfare transfer than the native reference group. Fully 73 percent of the immigrants were transfer recipients or unemployed that year, compared to 37 percent of the native males. This major difference between the two groups can largely be ‘explained’ by the dissimilarity in employment status, although immigrants are more likely to be transfer recipients or unemployed even conditional on employment status. About 90 percent of the non-employed immigrants received transfers or experienced unemployment spells in 2000, compared to around 82 percent of the non-employed natives in the reference group. The majority of those non-employed received a permanent disability pension, with a slightly higher proportion for immigrants (74 percent) than for natives (70 percent). We even observe disability retirement among those who were employed, a combination that can arise from either partial disability or transmission from job to permanent disability within the calendar year. Table 2 also shows that the low employment rates among the oldest birth cohorts in our study are not the result of ordinary early retirement.

The data underlying the descriptive statistics in Table 2 are available from 1992 onwards. Figures 5 and 6 display the trends in registered unemployment and participation in the various transfer programs over the 1992-2000 period. The higher rates of unemployment and welfare program participation among immigrants compared to natives are consistent throughout the period, but the figures illustrate a compositional change taking place over the decade. High unemployment and extensive participation in rehabilitation programs stand out from Figure 5 when we look at the immigrants’ experiences during the first half of

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<sup>7</sup> Between 1992 and 1997, about 90,000 individuals received such social assistance in Norway. The average transfer was approximately NOK 23,000 and the average loan amount NOK 800.

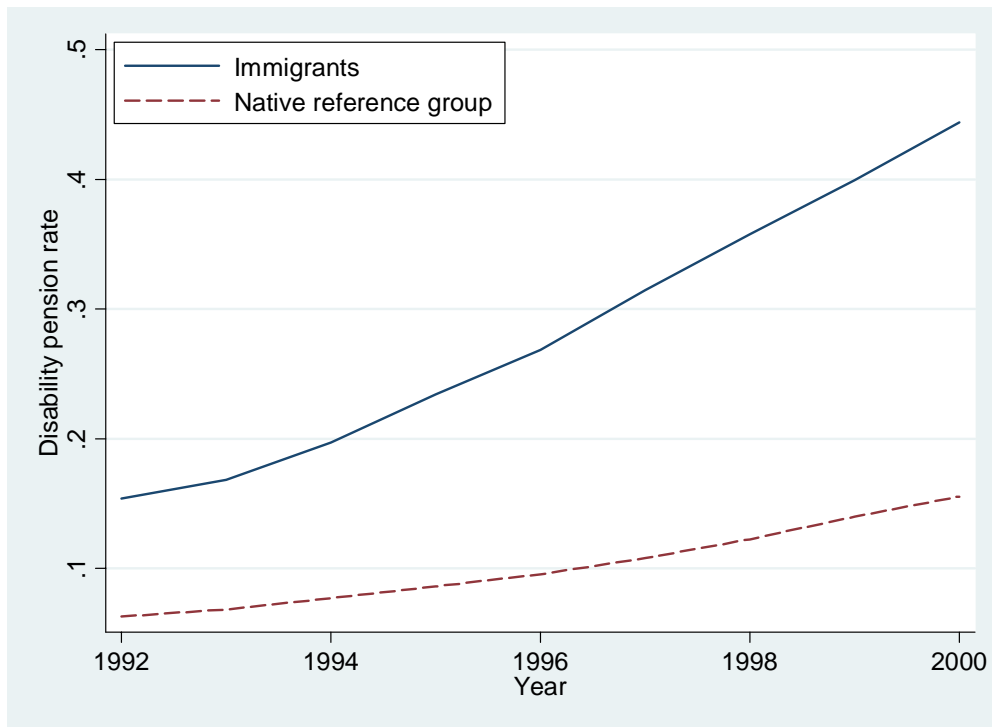
**Figure 5: Unemployment and transfer program participation 1992-2000, by immigrant status**



Note: Sample sizes are 2553 immigrants and 28,720 natives.

1990s. Social assistance was also common as more than one in five immigrants received this benefit. Over time, disability retirement has gradually replaced unemployment and rehabilitation. Presumably, many immigrants with long unemployment spells and rehabilitation attempts failed to get a foothold in the labor market and were entitled to a permanent disability pension. Disability pension uptake seems to follow non-employment with a time lag. In 1992, about one third of the non-employed immigrants in the sample received a disability pension. By 2000, this proportion had grown close to three out of four. As is evident from Figure 6, the declining pattern of immigrant employment is mirrored by a sharply rising trend in disability retirement.

Figure 6: Disability retirement 1992-2000, by immigrant status



Note: Sample sizes are 2553 immigrants and 28,720 natives.

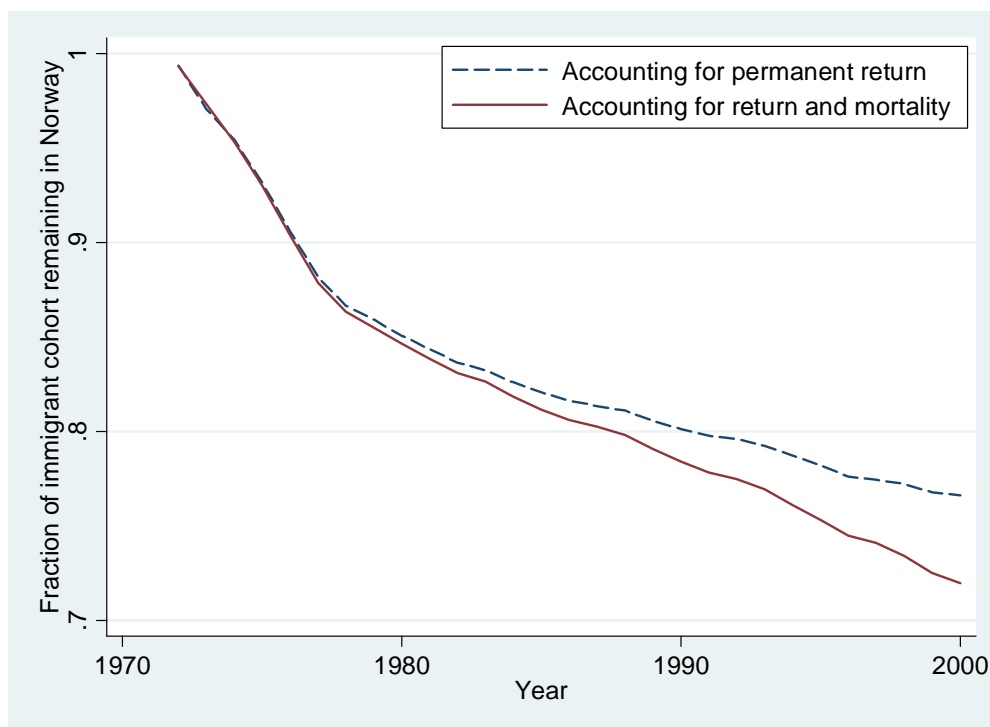
In Figure 5, long-term sick leave rates appear fairly constant over time. However, as employment rates of immigrants fell during the 1990s, sickness leaves were actually increasing for those entitled to this benefit. Social assistance rates among immigrants drop towards the end of the decade. In the literature, longitudinal patterns of receipt of social assistance have formed the basis for assessments of whether immigrants “assimilate into or out of welfare” (Hansen and Lofstrom, 2003; Riphahn, 2004). For the immigrant cohort under study, sole focus on social assistance would have led us to erroneously conclude that welfare dependency fell over time. In truth, welfare participation in the immigrant group increased substantially over the period, with the economically more favorable disability retirement replacing reliance on social assistance.

### **4.3 Return migration**

The fact that we are able to locate more than 98 percent of the immigrants that were not employed in 2000 in the unemployment register or as recipients of a welfare transfer, or identify a spouse or child in the Norwegian population register, debunks the explanation that the observed pattern of declining employment rates is an artifact of unregistered outmigration taking place over time (see Table 2, col. 2). But the question remains whether the immigrants who stayed on in Norway for the 30 year period form a representative sample of the original immigrant cohort. From a different data source with individual and longitudinal migration records, we are able to track the moves of the full immigrant cohort (these data are described in detail in Bratsberg et al, 2006b). But unfortunately, we can not link the records from the migration register to the pension credit data, so we are unable to address the question of whether those who left Norway during early years formed a select group of the original cohort. (Nonetheless, because practically everyone in our analysis sample, i.e., those who stayed for 30 years, were employed during the initial period, it seems unlikely that those who left were “positively selected” in terms of employment incidence.) In this section, we use the migration register data to describe the return migration behavior of the original cohort.

From the migration register, we identify 3,565 immigrants as belonging to the original cohort (based on gender, country and date of birth, and date of arrival). Of this group, 166 individuals (4.7 percent) were registered deceased by 2000 (i.e., they died while in Norway), and 833 (23.4 percent) had permanently left the country. (Not everyone returned to their source country; 30.0 percent of those who left moved onward to a third country, including 9.7 percent to a neighboring Scandinavian country, 4.6 percent to the United Kingdom, and 5.3 percent to Canada or the United States.) In Figure 7, we use the migration records and trace the fraction of the original cohort that remains in Norway over time. The plot shows a marked decline early on, indicating that most of the outmigration took place very soon after arrival.

**Figure 7: Fraction of original immigrant cohort not permanently outmigrated or dead**



Note: Sample size is 3564.

By 1978, 14 percent of the original cohort had left the country. Between 1978 and 2000, mortality and outmigration contributed to a slow reduction in the fraction remaining, and in 2000 72 percent of the original immigrant cohort remained alive and residing in Norway.

It is worth observing that payment of the main transfer benefit listed in Table 2, permanent disability pension, does not require residency in Norway. Riaz (2003) gives an account of some of the original cohort members who had return migrated to their home country and received their disability pension from Norwegian authorities there.<sup>8</sup> Because we focus on those who remained in Norway in 2000, permanent outmigrants are not captured by

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<sup>8</sup> In 2003, there were 257 persons in Turkey, 137 in Pakistan, and 120 in Morocco who received benefits from the Norwegian pension system (Riaz, 2003). We are unable to tell whether these benefit payments relate to the immigrant cohort under study here.



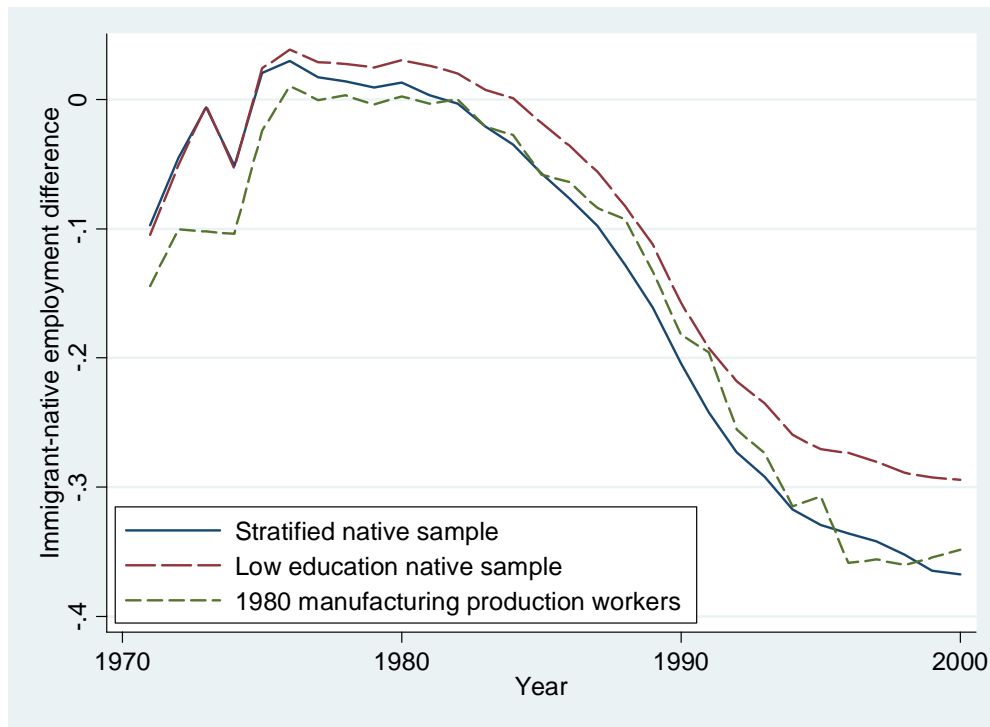
our analyses. It is, however, unclear whether such sample exclusion “biases” our conclusions in a positive or negative direction.

For those who remained in Norway, we are able to link employment status and temporary moves abroad between 1993 and 2000. Almost nine percent of the sample (219 individuals) had a temporary stay out of the country during this period (17.2 percent not in the source country). The data reveal that those who left the country temporarily had poorer employment outcomes than those who remained. In 2000, the employment rate among the temporary outmigrants was 33.8 percent, compared to 51.6 percent for those who did not outmigrate. We are, however, unable to conclude whether temporary outmigration leads to poor employment outcomes, or whether it is the other way around, that those not employed find the opportunity for a temporary stay in the source country. What is clear, is that the pattern of strongly declining employment rates over the lifecycle persists even when we restrict the sample to the immigrants who stayed in Norway permanently.

### **5. Plausible and less plausible explanations**

The core finding of this paper is that the employment careers of labor migrants who arrived in Norway from developing countries during the early 1970s are significantly shorter than those of a native-born comparison group with similar dates of birth and educational attainment. The strong drop in employment rates of labor immigrants over the lifecycle, accompanied by high propensities to collect social transfers such as disability pensions and rehabilitation assistance, raises concerns about increased labor immigration as a panacea to battle the problems of an aging population. But the policy implications of our findings depend on the nature of the underlying causal mechanism(s). This section contains a brief discussion of what our data can – and cannot – tell about possible explanations.

**Figure 8: Employment differentials between immigrants and natives, by comparison group**



Note: Sample sizes are 2553 immigrants and 28,720 natives (stratified sample comparison); 2553 immigrants and 28,109 natives (low education comparison); and 213 immigrants and 2131 natives (manufacturing comparison).

One potential explanation holds that the poor employment performance of immigrants results from skill-biased technological change that has reduced the demand for low-skilled manual labor, and increased the demand for communication skills. Such developments may have harmed the employment prospects of nonwestern immigrants in general and labor migrants recruited by manufacturing industry in the early 1970s in particular. Recent evidence from Norway shows that relative employment prospects of persons in the lower tail of the wage distribution, conditional on work experience and educational attainment, deteriorated during the 1990s (Røed and Nordberg, 2004). Moreover, as argued by Rosholm *et al.* (2006), changes in organizational structure toward more flexible work organizations may have

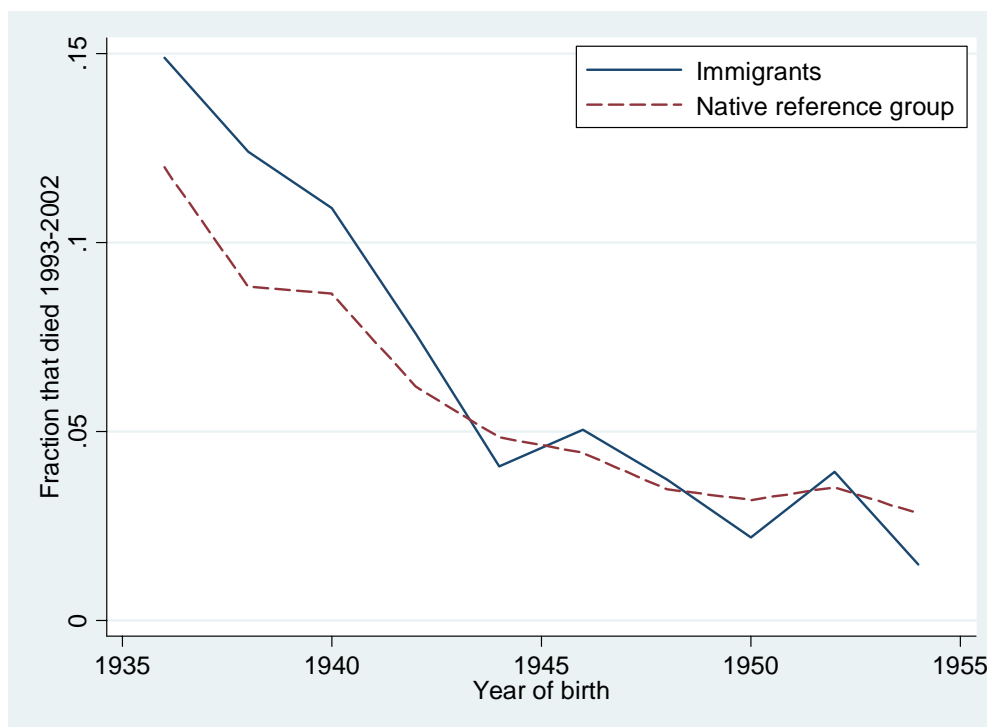
increased the importance of language proficiency and other country-specific skills and, thus, reduced the attractiveness of immigrant employees over time.

Figure 8 plots the differences in employment shares between immigrants and natives using three alternative sampling procedures for the native comparison group. The solid line represents the differential between immigrants and the stratified comparison group of natives already shown in Figure 1. The short-dotted line shows the differential arising from a comparison with manual manufacturing workers only.<sup>9</sup> This comparison is meant to address the ‘structural change’ hypothesis. If job-specific technological and structural change explains a substantial part of the overall decline in immigrant employment, the immigrant-native differential during the late 1980s and 1990s should disappear if we compared similar workers. We find, however, no significant change in the relative employment patterns when we restrict the analysis to manufacturing workers. The long-dotted line shows the differential arising when we compare the group of *all* labor migrants to a native comparison group consisting of those with compulsory schooling *only*. This comparison is meant to address the hypothesis that the immigrants’ formal education may overstate their human capital in the Norwegian labor market. Acknowledging that education is not perfectly transferable across countries, matching on years of schooling may give a positive qualification bias for the comparison group of natives. By comparing the immigrant cohort to natives with compulsory schooling we provide an upper bound on the contribution from differences in educational attainment to the employment differential. The negative trend in the employment differential is indeed less dramatic towards the end of the period in this comparison, but overall the relative drop in employment is of similar magnitude to that the other comparisons. We conclude from Figure

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<sup>9</sup> This comparison is based on matched information from the 1980 Census covering about 25 percent of the individuals in the labor migrant cohort. Tabulations from census data show that the most frequent occupation-by-industry combination among the labor migrants in 1980 was that of manual occupations in the manufacturing industries.

**Figure 9: Mortality 1993-2002, by immigrant status**



Note: Sample sizes are 2653 immigrants and 29,816 natives.

8 that neither skill-biased technological change nor any overstatement of immigrant educational qualifications was the main driving forces behind the sharp decline in relative immigrant employment.

Given the fact that a large fraction of the labor immigrants end up on disability retirement, it is possible that the migrant cohort on average has poorer health than the members of the native control group. While we do not have direct information regarding the health status of these two groups, we can obtain some indirect evidence by looking at mortality rates for similar groups of immigrants and natives that were alive in 1992 (from when we are able to follow them in administrative registers). Figure 9 shows the mortality rates during the period from 1993 to 2003 by year of birth for the labor migrant cohort and for the native control group. (Note that this comparison includes a few individuals who are not in

the samples used for analyses of employment because they died before 2000.) For individuals born before 1945 (and hence were older than 47 years of age in 1992), there is indeed some indication of higher mortality in the migrant population than among natives. However, higher mortality also implies that the individuals with poorest health are removed from the sample. Hence, the direct impact of higher mortality could be to reduce the fraction of disabled individuals, rather than raise it.

Another potential explanation for the short employment careers of labor immigrants is that some of them are equipped with cultural capital from their country of origin that includes norms regarding the 'normal' age of retirement that deviate from the relatively high retirement age in Norway. As such, participation patterns may to some extent develop independently of employment location. There is indeed substantial evidence indicating that country of origin is one of the most important factors for explaining labor market assimilation of immigrants in industrialized countries (Bauer *et al.*, 2000). Employment patterns in the source countries of the immigrants covered in our study do, however, not lend support to the idea that these immigrants bring with them a culture for early retirement. As it turns out, we find no decline in the employment propensities among 50-59 year old males in these countries that resembles the pattern observed for the migrants in Norway. For example, according to the Pakistan Federal Bureau of Statistics (2004), the 2003-2004 labor force participation rates for males in the Punjab region (the source region for the majority of Pakistani immigrants in Norway) were 96.1 for those aged 50-54, 89.7 for ages 55-59, and 82.7 for the 60-64 age group. If anything, these figures resemble those of the native-born reference group, not the cohort of labor migrants.

As discussed in the introduction to this paper, a relatively generous welfare state may attract migrants with relatively high risks of becoming dependent on social security transfers. Return migration may be even more selective, in the sense that migrants with a high risk of

social security dependency are less likely to remigrate. In addition to these potential sorting processes among labor migrants, there may be aspects of the Norwegian welfare system that give the immigrant population particularly weak work incentives compared to apparently similar natives. There are two reasons for this. The first is that immigrants on average earn lower wages than natives, and therefore typically face higher social security replacement *ratios* in a welfare system characterized by relatively high minimum benefit levels. The second is that the family structure of many immigrant households makes them eligible for supplementary benefits if they become temporary or permanently disabled. In particular, the disability pension system is comprised of means-tested payments for dependent spouses and children. These extra benefits can be quite substantial; currently up to around NOK 32,000 (about € 4,000) per year for a dependent spouse and NOK 25,000 for each child, and these benefits come on top of a replacement ratio that is already around two thirds of prior earnings and are subject to preferential tax treatment.<sup>10</sup> As a result, low-wage earners with many children can obtain effective replacement ratios that exceed 100 percent. This point is illustrated in Table 3, where we report actual disability payments and (alternative measures of) replacement ratios before tax for disabled individuals in our two samples in 2000. Note that net replacement ratios will be higher than those reported in the table, as disability benefits are taxed at a lower rate than labor earnings. As the table documents, disability benefits rise sharply with the number of children. Among immigrants with more than four children, 10.9 percent of the disabled actually receive a higher annual income from pensions than they *ever* earned in the labor market, and as many as 70.3 percent have a higher income on disability retirement than they had on average while active in the labor market. A similar pattern is found for natives, although the benefit level on average is lower for native individuals with

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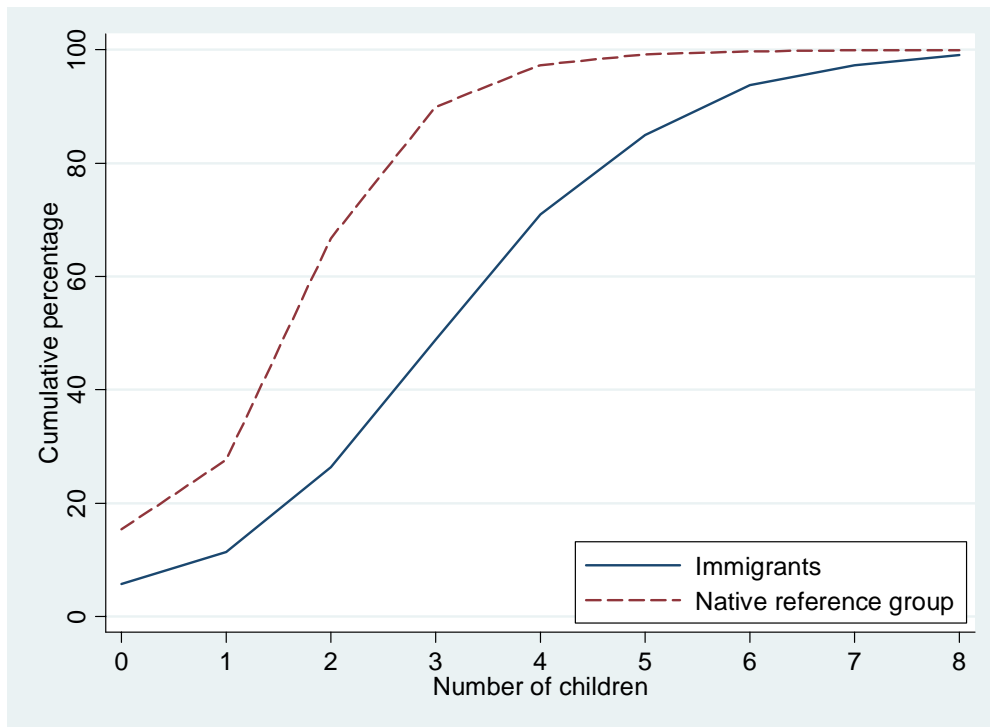
<sup>10</sup> The child allowance was raised from 25% of the social security base amount (*G*, currently NOK 62,892) to 40% in 2002. Means-testing was introduced in 1992.

**Table 3: Permanent disability pension benefits in 2000 relative to prior earnings**

	Obs	Mean benefit amount (NOK)	Benefits compared to best earnings year		Compared to average of 3 best earnings years		Compared to average earnings all years employed	
			Mean replacement ratio	Fraction with ratio > 1	Mean replacement ratio	Fraction with ratio > 1	Mean replacement ratio	Fraction with ratio > 1
<b>Immigrants:</b>								
All	1,114	158,712 (66,918)	.547 (.238)	.031	.588 (.250)	.044	.854 (.360)	.262
By #children ages 0-18 in 2000:								
0	370	130,730 (46,563)	.455 (.159)	.005	.489 (.166)	.011	.711 (.250)	.089
1	228	149,236 (64,466)	.516 (.213)	.022	.547 (.200)	.022	.795 (.293)	.189
2	207	160,093 (56,868)	.564 (.216)	.014	.605 (.228)	.019	.878 (.343)	.266
3	152	184,486 (62,596)	.614 (.220)	.066	.669 (.250)	.112	.977 (.341)	.401
4	93	208,382 (80,961)	.704 (.353)	.075	.763 (.375)	.097	1.090 (.523)	.591
5 or more	64	216,391 (91,362)	.747 (.309)	.109	.802 (.316)	.156	1.179 (.432)	.703
<b>Natives:</b>								
All	3,957	138,763 (50,847)	.505 (.215)	.016	.546 (.252)	.025	.855 (.544)	.190
By #children ages 0-18 in 2000:								
0	3,157	137,699 (50,355)	.500 (.211)	.014	.541 (.250)	.022	.846 (.547)	.174
1	528	140,097 (50,041)	.510 (.225)	.019	.552 (.257)	.032	.861 (.530)	.212
2	183	145,449 (52,877)	.532 (.219)	.016	.574 (.241)	.022	.896 (.465)	.262
3	65	143,638 (56,756)	.555 (.232)	.031	.618 (.286)	.062	1.036 (.664)	.415
4 or more	24	185,233 (73,594)	.647 (.301)	.083	.687 (.301)	.083	1.107 (.479)	.625

Note: Standard deviations are reported in parentheses. Samples consist of those individuals in the overall immigrant (2,553 persons) and native (28,720 persons) extracts who received permanent disability pension benefits in 2000. Samples are further restricted to individuals with at least five years of prior labor market earnings and whose average earnings in the three best years were at least 2G (i.e., the equivalent of NOK 98,180 in 2000).

**Figure 10: Number of children, by immigrant status**



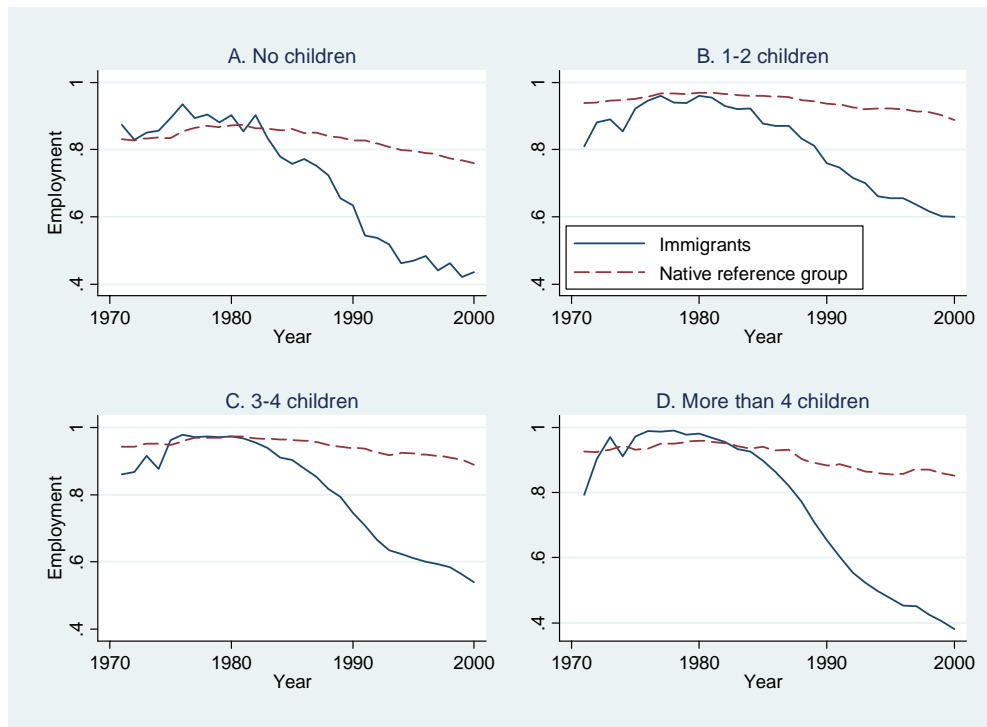
Note: Number of children refers to children ever born. Sample sizes are 2553 immigrants and 28,720 natives.

children than among immigrants, even conditional on the number of children. An important reason for this is that more immigrants receive supplementary benefits for a dependent spouse. Figure 10 illustrates more clearly why this system may have differential effects on the employment patterns of immigrants and natives. While around 55 percent of the immigrants have four or more children, this is the case for less than 10 percent of the native control group.

Figure 11 illustrates the association between employment patterns and the number of children for immigrants and natives, and Figure 12 provides a similar illustration of the relationship between disability retirement frequencies and number of children. The childless tend to have low employment rates and high disability rates both among immigrants and natives. We interpret this primarily as reflecting an underlying sorting process. Given that there are children in the family, however, more children go hand in hand with lower



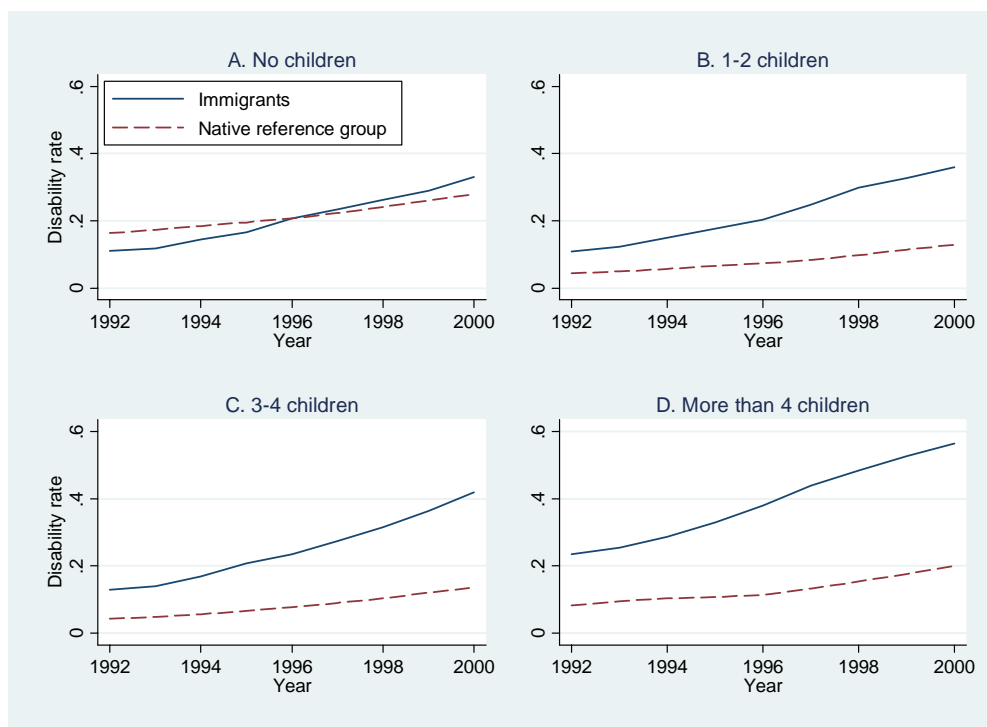
**Figure 11: Employment patterns by number of children and immigrant status**



Note: Number of children refers to children ever born. Sample sizes are 145 immigrants and 4326 natives (no children); 526 immigrants and 14809 natives (1-2 children); 1140 immigrants and 8810 natives (3-4 children); and 742 immigrants and 775 natives (more than 4 children).

employment rates and higher disability propensities. For natives, this effect is rather small. For the cohort of labor migrants, the effect is big. An interesting point to note from Figure 12 is that for the childless, there is little systematic difference in disability propensities between immigrants and natives. However, in larger families the difference between immigrants and natives grows sharply. For labor immigrants with more than four children, the disability retirement rate in 2000 was close to 60 percent, almost twice the rate of childless immigrants. As around 30 percent of the immigrants in fact have more than four children, this is not a point of academic interest only. Differences in family structure seem to be an important part of the story behind the relative decline in employment among labor immigrants. It is unlikely that the health of male immigrants with many children is systematically much worse than the

**Figure 12: Disability retirement by number of children and immigrant status**

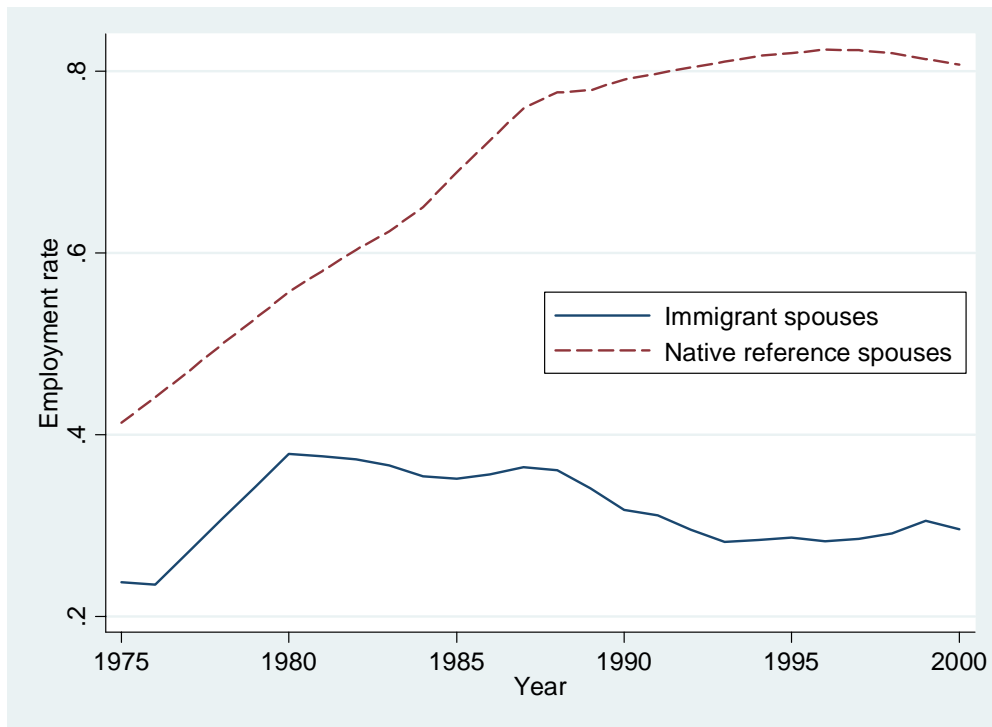


Note: Number of children refers to children ever born. Sample sizes are 145 immigrants and 4326 natives (no children); 526 immigrants and 14809 natives (1-2 children); 1140 immigrants and 8810 natives (3-4 children); and 742 immigrants and 775 natives (more than 4 children).

health of immigrants with no or fewer children. Hence, it seems reasonable to interpret our findings at this point as relating to the strong work disincentives for heads of large households that are embedded in the disability insurance system.

The labor immigrants under study not only tend to have many children, they also tend to have a dependent spouse, implying that they receive a supplementary spousal benefit and avoid benefit reductions from means-testing on the basis of household earnings. The point is illustrated in Figures 13 and 14 and in Table 4, where we look at the employment and disability patterns of spouses of the cohort of labor migrants and the native comparison group. In 2000, 70 percent of the married male labor immigrants had a non-employed spouse, while this was the case for only 20 percent of the native comparison group.

**Figure 13: Spouses' employment 1975-2000, by immigrant status**



Note: Samples consist of 2380 spouses of immigrants and 24,968 spouses of natives. Employment rate is conditional on residence in Norway and age between 25 and 64.

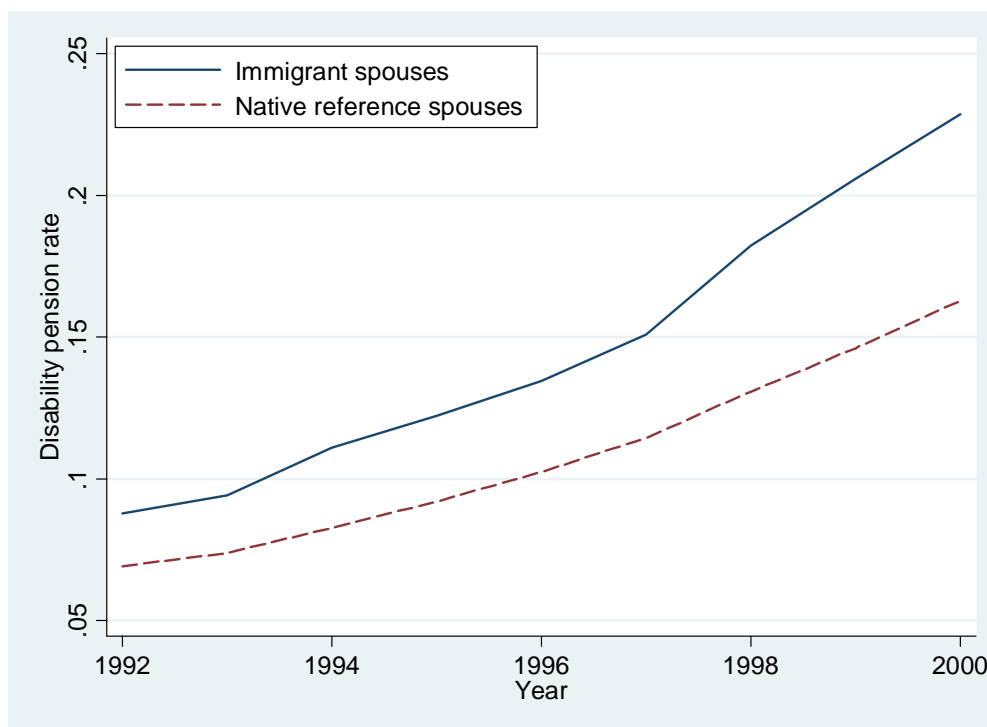
The extremely low labor market participation rates of the labor migrants' spouses should also be taken into account in assessments of the fiscal impact of labor immigration. Looking at the combined population of married labor migrants and their spouses (not reported in tables), we find that 40 percent were employed in 2000, while around 61 percent claimed at least one type of social security transfer during the year (these numbers do not necessarily sum to 100 percent, as it is possible to be both employed and claim benefits). Around 55 percent of the immigrant households had at least one person receiving a permanent disability pension in 2000, compared to 25 percent for the native comparison group. To sum up, the differences in family structure and female work employment patterns equip the male labor immigrant group with much weaker work incentives compared to natives.

**Table 4: Spouses. 2000 Rates of Unemployment Incidence, Rehabilitation, Disability Pension, and Social Assistance**

	Spouses of male immigrants from Pakistan, Turkey, India and Morocco, arrival 1971-75			Spouses of matched group of native-born men		
	All	Non- employed	Employed	All	Non- employed	Employed
Unemployment	.137	.107	.210	.082	.086	.080
Long-term sick leave	.119	.007	.356	.198	.012	.242
Rehabilitation	.071	.064	.087	.052	.105	.040
Social assistance	.032	.038	.020	.020	.064	.009
Disability pension	.228	.279	.108	.163	.488	.085
Unemployment or transfer	.477	.420	.613	.411	.613	.363
Early retirement	.000	.000	.000	.004	.009	.003
Children	.974	.976	.971	.956	.939	.960
Observations	2,380	1,675	705	24,968	4,810	20,158
Percent of sample	100.0	70.4	29.6	100.0	19.3	80.7

A final explanation to consider is that immigrants face some kind of discrimination in the labor market, or that they for other reasons are denied equal access to the labor market. Norway went through two economic slumps during the period considered in this paper – one during the early 1980s and one during the late 1980s and early 1990s – and it is probable that these had a larger adverse effect on the employment opportunities for immigrants than for natives. This explanation is consistent with the fact that the steepest decline in the employment rates of the immigrant population (compared to the natives) are found precisely during these two periods. Our estimation results also confirm that the employment patterns of immigrants are more sensitive to business cycle fluctuations than those of natives (see Appendix Tables A1 and A2). For example, evaluated at the mean level of yearly transition rates for immigrants and natives, our point estimates imply that an increase in the unemployment rate of 3 percentage points (about a 100 percent increase at the sample mean)

**Figure 14: Spouses' disability retirement, 1992-2000, by immigrant status**



Note: Samples consist of 2380 spouses of immigrants and 24,968 spouses of natives.

raises the transition rate from employment to non-employment by 2.0 percentage points (from 7.4 to 9.4) for immigrants, compared to only 0.6 percentage points (from 2.7 to 3.3) for natives. The same increase in unemployment reduces the transition rate from non-employment to employment by as much as 8.4 percentage points (from 30.3 to 21.9) for immigrants, while it reduces the transition rate by 4.6 percentage points (from 34.8 to 30.2) for natives. Hence, economic slumps have the effect of sorting immigrant workers out of the labor market. The dismal employment history of labor immigrants may to some extent reflect that the Norwegian labor market does not provide opportunities for stable employment for these workers.

## 6. Conclusion

This paper has documented that male labor migrants who came to Norway during the early 1970s tended to have extremely short employment careers compared to a reference group of natives (matched on age and educational attainment). Based on the estimation of a simultaneous transition model between the states of employment and non-employment, we have found that the disparity in employment profiles between immigrants and natives primarily results from differences in non-employment incidence, but that differences in non-employment persistence also played a role, particularly during economic downturns. The poor long-term performance of labor immigrants suggests that opening the border is not a panacea to solve the fiscal problems associated with aging population. This cheerless conclusion is even more apparent if one also takes the dismal employment record of the spouses of the labor migrant cohort into account. To the extent that immigration policy is used as part of the solution to demographic imbalances, it is essential that such policy also contains a strategy to ensure a better and more stable utilization of the extra labor. We do not hold the evidence to provide a recipe for such a strategy. Nevertheless, we have found that the welfare system, with high replacement ratios for household heads with a non-working spouse and many children, provides extremely poor work incentives for families of the type that dominates the cohort of labor migrant considered in this paper. Replacement ratios exceeding 100 percent are not uncommon. But the poor lifecycle employment performance of immigrants cannot be explained by poor work incentives alone. We have also identified a particularly strong sensitivity of immigrant employment to business cycle fluctuations, suggesting that immigrants sometimes end up as a sort of reserve labor, that may be ‘included’ during good times, but ‘excluded’ during downturns. Many of the labor migrants under study fell out of the labor market during the two cyclical slumps that hit Norway during the 1980s and 1990s.

The detrimental effects of economic downturns are likely reinforced by weak incentives as the rewards to returning to the labor market when jobs become available are small.

The finding that immigrant employment was particularly vulnerable to economic downturns during the 1980s and 1990s points to skill-biased technological change as a possible source of the observed differences in lifecycle employment of immigrants and natives. We fail to uncover support for this explanation, however. When we restrict the native comparison group to those who held manual occupations in the manufacturing industries in 1980, or to those with compulsory schooling only, the differences in employment patterns between immigrants and natives prevail. Even though employment rates among the native workers most affected by skill-biased technological change trended down over the period, their decline was nowhere near that of the immigrant group under study.

Notwithstanding the problems of ranking the possible explanations, our results clearly indicate that labor migrants to Norway from nonwestern countries find it hard to sustain employment and earnings careers comparable to those of natives. Whatever the underlying reasons, the finding has important implications for appropriate assumptions in macro projections of the effects of increased immigration.

A key question is whether our findings regarding labor migrants during the 1970s are relevant for the behavior of potential labor immigrants to Europe from developing countries today? This may to some extent depend on the way in which new immigrants are selected. However, separate analyses (not discussed in the paper) by educational attainment disclose falling employment rates for both high and low-skilled immigrants, so imposing tighter skill requirements for new immigrants is unlikely to prevent the declining employment patterns. What we clearly can say is that initial employment upon arrival is no guarantee for lifetime employment.

## References

- Barth, Erling, Bernt Bratsberg, and Oddbjørn Raaum (2004), Identifying Earnings Assimilation of Immigrants under Changing Macroeconomic Conditions, *Scandinavian Journal of Economics*, Vol. 106, No 1, 1-22
- Bauer, Thomas K., Magnus Lofstrom, and Klaus F. Zimmermann (2000), Immigration Policy, Assimilation of Immigrants, and Natives' Sentiments towards Immigrants: Evidence from 12 OECD Countries, *Swedish Economic Policy Review*, 7, 11-53.
- Boeri, Tito, and Herbert Brücker (2005), Why Are Europeans So Tough on Migrants? *Economic Policy*, October, 629-703.
- Borjas, George J. (1987), Self-Selection and the Earnings of Immigrants, *American Economic Review*, 77, 531-53.
- Borjas, George J. (1999), The Economic Analysis of Immigration, in O. Ashenfelter and D. Card, eds., *Handbook of Labour Economics*, Vol. 3, Amsterdam: Elsevier.
- Borjas, George J., and Stephen J. Trejo (1993), National Origin and Immigrant Welfare Reciprocity, *Journal of Public Economics*, 50(3): 325-44.
- Bratberg, Espen, Tor Helge Holmås, and Øystein Thøgersen (2004), Assessing the Effects of an Early Retirement Program, *Journal of Population Economics*, Vol. 17, 387-408.
- Bratsberg, Bernt, Erling Barth and Oddbjørn Raaum (2006a), Local Unemployment and the Relative Wages of Immigrants: Evidence from the Current Population Surveys, *The Review of Economics and Statistics*, 88(2), May, 243-263.
- Bratsberg, Bernt, Oddbjørn Raaum, and Kjetil Sørli (2006b), Who Leaves, and Where? Patterns of Repeat and Return Migration among Immigrants in Norway, Manuscript, Frisch Centre.
- Chiswick, Barry R. (1978), The Effect of Americanization of the Earnings of Foreign-born Men, *Journal of Political Economy*, 86, 897-921.
- Dahl, Sverre Å., Øivind A. Nilsen, and Kjell Vaage (2000), Work or Retirement? Exit Routes for Norwegian Elderly, *Applied Economics*, 32(14): 1865-76.
- Edin, Per A., Robert J. LaLonde, and Olof Åslund (2000), Emigration of immigrants and measures of immigrant assimilation: Evidence from Sweden, *Swedish Economic Policy Review*, 7, 163-204.
- Gaure, Simen., Knut Røed, and Tao Zhang (2005), Time and Causality: A Monte Carlo Assessment of the Timing-of-Events Approach. Memorandum No. 19/2005, Department of Economics, University of Oslo.
- Hansen, Jorgen, and Magnus Lofstrom (2003), Immigrant Assimilation and Welfare Participation: Do Immigrants Assimilate Into or Out of Welfare? *Journal of Human Resources*, 38 (1): 74-98.



- Heckman, James and Burton Singer (1984) A Method for Minimizing the Impact of Distributional Assumptions in Econometric Models for Duration Data, *Econometrica*, 52, 271-320.
- Husted, Leif, Helena S. Nielsen, Michael Rosholm, and Nina Smith (2001), Employment and Wage Assimilation of Male First Generation Immigrants in Denmark, *International Journal of Manpower*, 22, 39-68.
- Lindsay, Bruce G. (1983), The Geometry of Mixture Likelihoods: A General Theory, *The Annals of Statistics*, Vol. 11 (1), 86-94.
- OECD (2001), The Employment of Foreigners: Outlook and Issues in OECD Countries, Chapter 5 in *OECD Employment Outlook*, Paris: OECD (June).
- Pakistan Federal Bureau of Statistics (2004), *Labor Force Survey 2003–2004: Twenty fourth issue*, Islamabad: Federal Bureau of Statistics.
- Riaz, Wasim K. (2003) Realizing the Dream on Norwegian Benefits (“Oppfyller drømmen på norsk trygd,” in Norwegian), *Aftenposten*, February 14, 2003.
- Riphahn, Regina T. (2004), Immigrant Participation in Social Assistance Programs: Evidence from German Guestworkers, *Applied Economics Quarterly*, Vol. 50(4): 329-62.
- Rosholm, Michael, Kirk Scott, and Leif Husted (2006), The Times They are A-Changin': Declining Immigrant Employment Opportunities in Scandinavia, *International Migration Review*, 40(2), 318-47.
- Røed, Knut, and Morten Nordberg (2004), Have the Relative Employment Prospects for the Low-Skilled Deteriorated After All? *Journal of Population Economics*, Vol. 17, 67-82.
- Storesletten, Kjetil (2000) Sustaining Fiscal Policy Through Immigration, *Journal of Political Economy*, Vol. 108(2), 300-23.
- Storesletten, Kjetil (2003) Fiscal Implication of Immigration - a Net Present Value Calculation, *Scandinavian Journal of Economics*, vol 105 (3), 487-506.
- Tjelmeland, Hallvard, and Grete Brochmann (2003) *Norsk innvandringshistorie: Bind 3, I globaliseringens tid (Norwegian Immigration History: Volume 3, In the Age of Globalization)*, Oslo: Pax.

**Appendix Table A1: Linear Employment Probability Models,  
Random Effects Estimates**

	Immigrants		Natives	
	Coefficient estimate	Standard error	Coefficient estimate	Standard error
<b>YSM</b>				
1	0.2405	0.0117		
2	0.2532	0.0115		
3	0.2483	0.0114		
4	0.2490	0.0115		
5	0.2509	0.0116		
6	0.2475	0.0119		
7	0.2481	0.0123		
8	0.2441	0.0128		
9	0.2468	0.0133		
10	0.2372	0.0139		
11	0.2200	0.0144		
12	0.1990	0.0150		
13	0.1755	0.0156		
14	0.1450	0.0163		
15	0.1338	0.0170		
16	0.1204	0.0178		
17	0.1087	0.0187		
18	0.0990	0.0197		
19	0.0731	0.0206		
20	0.0735	0.0214		
21	0.0546	0.0221		
22	0.0451	0.0226		
23	0.0217	0.0231		
24	0.0195	0.0237		
25	0.0171	0.0243		
26	0.0131	0.0251		
27	-0.0166	0.0262		
28	-0.0060	0.0273		
29	-0.0011	0.0286		
<b>Age</b>				
26	0.0043	0.0119	0.0206	0.0021
27	0.0106	0.0117	0.0348	0.0021
28	-0.0011	0.0117	0.0448	0.0020
29	0.0037	0.0119	0.0514	0.0020
30	0.0013	0.0121	0.0535	0.0020
31	0.0059	0.0123	0.0569	0.0020
32	0.0004	0.0127	0.0552	0.0020
33	0.0052	0.0130	0.0550	0.0020
34	0.0042	0.0135	0.0539	0.0020
35	0.0022	0.0140	0.0529	0.0020
36	0.0039	0.0145	0.0514	0.0020
37	0.0097	0.0151	0.0490	0.0020
38	0.0091	0.0157	0.0459	0.0020
39	0.0075	0.0163	0.0468	0.0020
40	0.0075	0.0170	0.0444	0.0020
41	0.0050	0.0176	0.0402	0.0020
42	0.0086	0.0183	0.0385	0.0020
43	-0.0038	0.0190	0.0354	0.0020
44	-0.0128	0.0197	0.0338	0.0021

45	-0.0258	0.0204	0.0299	0.0021
46	-0.0294	0.0211	0.0286	0.0021
47	-0.0517	0.0219	0.0270	0.0021
48	-0.0636	0.0227	0.0226	0.0021
49	-0.0823	0.0235	0.0194	0.0021
50	-0.1002	0.0243	0.0157	0.0022
51	-0.1230	0.0252	0.0094	0.0023
52	-0.1426	0.0261	0.0054	0.0024
53	-0.1721	0.0270	-0.0046	0.0025
54	-0.1939	0.0280	-0.0126	0.0026
55	-0.2187	0.0290	-0.0225	0.0027
56	-0.2346	0.0301	-0.0309	0.0029
57	-0.2715	0.0313	-0.0417	0.0031
58	-0.3078	0.0326	-0.0608	0.0033
59	-0.3298	0.0343	-0.0833	0.0038
60	-0.3718	0.0358	-0.1062	0.0041
61	-0.3919	0.0383	-0.1410	0.0047
62	-0.3904	0.0421	-0.1788	0.0057
63	-0.4889	0.0478	-0.3096	0.0072
64	-0.5248	0.0592	-0.3882	0.0099
Local unempl rate	-2.0349	0.1219	-0.3280	0.0154
Educational attainment				
10-11	0.0096	0.0112	0.0380	0.0024
12	0.0443	0.0142	0.0672	0.0031
13-15	0.0338	0.0160	0.0547	0.0035
16+	0.0281	0.0133	0.0628	0.0029
Missing	-0.0583	0.0127	-0.0995	0.0150
Regional dummies				
East, except Oslo	0.0197	0.0135	0.0146	0.0031
Inland	0.0719	0.0277	0.0071	0.0037
South	-0.0222	0.0299	0.0096	0.0044
West	0.0225	0.0164	0.0225	0.0029
Central	0.0629	0.0426	0.0228	0.0031
North	0.0852	0.0718	0.0025	0.0033
Constant	0.7200	0.0138	0.8595	0.0028

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Note: Dependent variable is employment. Estimates are based on 68,220 observations of 2553 immigrants and 786,288 observations of 28,720 natives.

**Appendix Table A2: Nonparametric Maximum Likelihood Estimation Results,  
Employment Status Transitions**

	Immigrants				Natives			
	From employment to non-employment		From non-employment to employment		From employment to non-employment		From non-employment to employment	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
<b>YSM</b>								
2	.0602	.3426						
3	.3773	.2941	.1750	.9711				
4	.0711	.3174	-.6485	.7625				
5	Ref.		Ref.					
6	.4671	.2828	-.3871	.7017				
7	.7636	.2651	.1407	.5059				
8	.9998	.2528	-.5887	.5750				
9	.9650	.2543	-.5533	.5253				
10	1.2925	.2495	-.9986	.5124				
11	1.5927	.2437	-1.1632	.5185				
12	1.9285	.2361	-.9030	.517				
13	2.1429	.2400	-.9134	.5095				
14	2.3132	.2393	-1.4250	.5096				
15	2.3452	.2455	-1.3037	.5105				
16	2.3685	.2499	-1.5259	.5177				
17	2.3825	.2512	-1.6446	.5285				
18	2.4826	.2578	-1.5041	.5275				
19	2.6492	.2644	-1.5058	.5378				
20	2.3124	.2696	-1.3492	.5364				
21	2.4166	.2743	-1.6123	.5445				
22	2.3931	.2764	-1.3682	.5424				
23	2.4135	.2735	-1.7488	.5452				
24	2.3207	.2718	-1.4602	.5411				
25	2.2337	.2783	-1.6431	.5437				
26	2.3291	.2822	-1.5457	.5474				
27	2.4923	.2918	-1.7906	.5595				
28	2.3609	.3029	-1.5133	.5724				
29	2.1855	.3232	-1.6437	.5960				
<b>Age</b>								
26	.4662	.3103			.8626	.0712		
27	.0875	.3425	.4315	.7964	.8577	.0714	-.1699	.1468
28	.3500	.2795	-.6985	.7432	.7198	.0734	-.1792	.1298
29	-.0257	.3014	-.0978	.5771	.6044	.0724	.0031	.1222
30	Ref.		Ref.		Ref.		Ref.	
31	.0672	.2608	-1.1563	.5446	.4765	.0747	-.0567	.1240
32	.4139	.2382	-.1020	.5082	.5659	.0728	-.3318	.1243
33	.2066	.2341	-.2798	.4695	.5942	.0730	-.1813	.1233
34	.1429	.2321	-.3120	.4905	.6365	.0716	-.3364	.1215
35	.3350	.2270	-.4424	.489	.6427	.0718	-.5023	.1203
36	.2944	.2254	-.4017	.4764	.6448	.0715	-.5596	.1205
37	.0669	.2305	-.3890	.4676	.7434	.0695	-.6445	.1146
38	.2012	.2220	-.4827	.4713	.7583	.0692	-.8734	.1177
39	.2368	.2260	-.5011	.4749	.6039	.0720	-.8284	.1130
40	.1862	.2290	-.5783	.4662	.7484	.0696	-.8101	.1131
41	.1657	.2259	-.6659	.4807	.7940	.0700	-1.0250	.1158
42	.1267	.2308	-.5318	.4666	.8041	.0695	-.9447	.1135

43	.2473	.2277	-.8509	.4890	.8456	.0689	-.9923	.1146
44	.3780	.2300	-.7505	.4768	.8342	.0698	-.9968	.1121
45	.3267	.2330	-1.0536	.4811	.8750	.0700	-1.1572	.1123
46	.3077	.2358	-.9298	.4817	.8633	.0701	-1.1100	.1104
47	.4790	.2404	-1.3217	.4882	.8263	.0718	-1.2322	.1130
48	.4784	.2474	-1.2140	.4880	.8986	.0715	-1.3965	.1156
49	.5976	.2508	-1.2589	.4960	.9321	.0727	-1.4315	.1166
50	.6361	.2577	-1.4966	.5079	.9905	.0738	-1.5019	.1196
51	.8340	.2586	-1.4572	.5066	1.0551	.0761	-1.6410	.1211
52	.8047	.2646	-1.7077	.5208	1.0194	.0809	-1.7501	.1256
53	.6770	.2762	-2.1430	.5378	1.1942	.0812	-2.0435	.1351
54	1.0280	.2769	-1.8147	.5310	1.2600	.0856	-1.9568	.1339
55	.9164	.2975	-2.0391	.5495	1.3661	.0884	-2.1452	.1426
56	.7924	.3212	-2.1761	.5621	1.3733	.0964	-2.1039	.1460
57	1.1833	.3221	-2.3881	.5840	1.4197	.1013	-2.3340	.1565
58	1.1741	.3522	-3.1458	.6601	1.7778	.0992	-2.5846	.1680
59	1.4131	.3698	-2.9462	.6511	1.9762	.1086	-2.8842	.1858
60	1.7563	.3719	-3.4668	.7379	2.1490	.1133	-2.6727	.1792
61	1.5655	.4646	-3.4198	.8039	2.6956	.1115	-3.0572	.2149
62	1.4871	.5590	-2.4874	.7331	2.8034	.1357	-2.9612	.2230
63	3.3605	.4951	-3.0569	1.0009	4.1592	.1178	-3.4367	.3080
64	3.0398	.7710	-3.3055	1.1886	4.1581	.1642	-4.0538	.3710
Local unempl rate	8.8403	1.7173	-14.7024	2.7678	7.0968	.4821	-6.9864	.7485
Educational attainment								
10-11	.0429	.0913	.5494	.1460	-.3719	.0353	.4081	.0480
12	-.2880	.1137	.6152	.1909	-1.0953	.0515	.7347	.0779
13-15	-.1808	.1245	.5831	.2212	-.8108	.0573	.5415	.0808
16+	-.1026	.1029	.7731	.1726	-1.1436	.0519	.8918	.0782
Missing	.4603	.0940	-.0310	.1605	.3171	.1923	.1147	.2355
Regional dummies								
East excl Oslo	-.1293	.1142	-.0920	.1840	-.2009	.0466	.2184	.0660
Inland	-.3537	.2436	.9844	.3937	-.0363	.0563	.1103	.0798
South	.1582	.2115	.3587	.4358	-.0915	.0685	.1055	.0915
West	-.1002	.1195	.2773	.1919	-.4225	.0449	.2190	.0648
Central	-.5713	.3707	1.2899	.6487	-.3112	.0487	.5047	.0677
North	.2966	.8680	1.2655	1.0519	.0854	.0501	.4360	.0692

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Unobserved heterogeneity	9 support points in discrete distribution (results not reported)	12 support points in discrete distribution (results not reported)
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Note: Estimates are based on 66,614 observations of 2553 immigrants and 765,936 observations of 28,669 natives.