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ABSTRACT

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We find that the lifecycle employment profiles of nonwestern male labor migrants who 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. To some extent, the decline in immigrant employment can be explained by immigrants being overrepresented in jobs associated with short employment careers. But we also identify considerable disincentives embedded in the social security system that contribute to poor lifecycle employment performance of immigrants with many dependent family members. Finally, we uncover evidence that labor immigrants are particularly vulnerable to the state of the economy and face a high probability of permanent exit from employment during economic downturns.

JEL Classification: F22, H55, J21, J61

Keywords: labor migration, labor market outcomes

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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 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. This issue is high on the political agenda in many rich countries.[1] 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. 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, close to full participation is ensured initially. However, 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).[2] There are important differences across host countries, however, with respect to the selection of immigrants, the presence of xenophobia and discriminatory practices, and work incentives facing immigrants. Hence, empirical findings regarding the assimilation process of immigrants may not be directly transferable across

[1] For example, the Commission of the European Communities (2005, p. 4) states that "… while immigration in itself is not a solution to demographic ageing, more sustained immigration flows could increasingly be required to meet the needs of the EU labour market and ensure Europe's prosperity".

[2] 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.

different countries. In welfare state economies, one could 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 European welfare states, 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). Empirical evidence indicates that these immigrants have substantially higher inactivity rates than natives in most European host countries (exceptions being Greece, Italy, and Spain); see OECD (2001). Differences between immigrants and natives in employment rates are likely to be 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, respectively. It remains unclear, however, whether such 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, or whether the patterns represent more structural deficiencies in the host countries' ability to integrate minority immigrants into their labor markets.

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 96 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, the spouse 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 pension. More than 90 percent of the non-employed labor immigrants received some form 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*. We find that around three quarters of the immigrant-native employment differential can be attributed to differences in non-employment incidence. However, having left employment, the prospects for re-entry deteriorate more rapidly for immigrants than for natives, and immigrants also need longer tenure in a new employment spell before they attain job security. The higher exit rates among labor immigrants can only to a very limited extent be attributed to differences in the effects of aging. Relative to natives, we find that immigrant exit rates primarily rise with years since migration, and not with age, ceteris paribus. Consequently, the lifecycle employment pattern of the cohort of minority labor immigrants who arrived in Norway during the early 1970s conveys a story of labor market dissimilation, rather than assimilation.

The paper also discusses alternative explanations behind the dismal long-term employment performance of labor immigrants. We end up focusing on three key mechanisms. First, we show that immigrants disproportionately held jobs that, ex post, were associated with relatively short expected employment careers. Second, we argue that the Norwegian welfare system, with high replacement ratios for household heads with low labor earnings, a non-working spouse and many children, provides exceptionally poor work incentives for families of the type that dominates the cohort of labor migrants considered in this paper. And third, we

show that immigrant employment exhibits particularly strong sensitivity towards business cycle fluctuations, and that two economic downturns during the 1980s and 1990s in practice sorted many of the labor immigrants out of the labor market. For those who were employed in 1980, we examine employment status in year 2000 conditional on a wide range of job characteristics describing the jobs they held in 1980 (such as occupation, industry, pay, and geographic location) and a vector of family characteristics that strongly affects the social security replacement ratios (the number of children and the presence of a non-working spouse). An intriguing finding is that, while the 1980 job characteristics do explain a substantial part of the immigrant-native employment differential in 2000 (conditioning on these variables reduces the differential by 23 percent), the family structure variables have an even larger impact (reducing the differential by 31 percent).

The next section provides a description of our data and gives a brief empirical overview of employment patterns and social security take-up rates. 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, job-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 male immigrants 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 manufacturing experienced shortages in domestic labor markets and actively recruited workers from developing countries.[3] 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.

2.1. Employment patterns among immigrants and natives

Our employment data draw on individual histories of accumulation of credit points in the Norwegian public pension system. 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.[4] Specifically, credit points are computed from total annual earnings and the social security base figure (*G*, which equaled NOK 49,090, about € 6,100, in 2000). Individuals receive no credits unless their earnings are at least *1 G* and we define an individual as being employed during the year if he earned at least some credits that year.

[3] 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 which in practice meant that the immigrant had a job offer from a Norwegian employer at the time of entry.

Table 1: Descriptive statistics

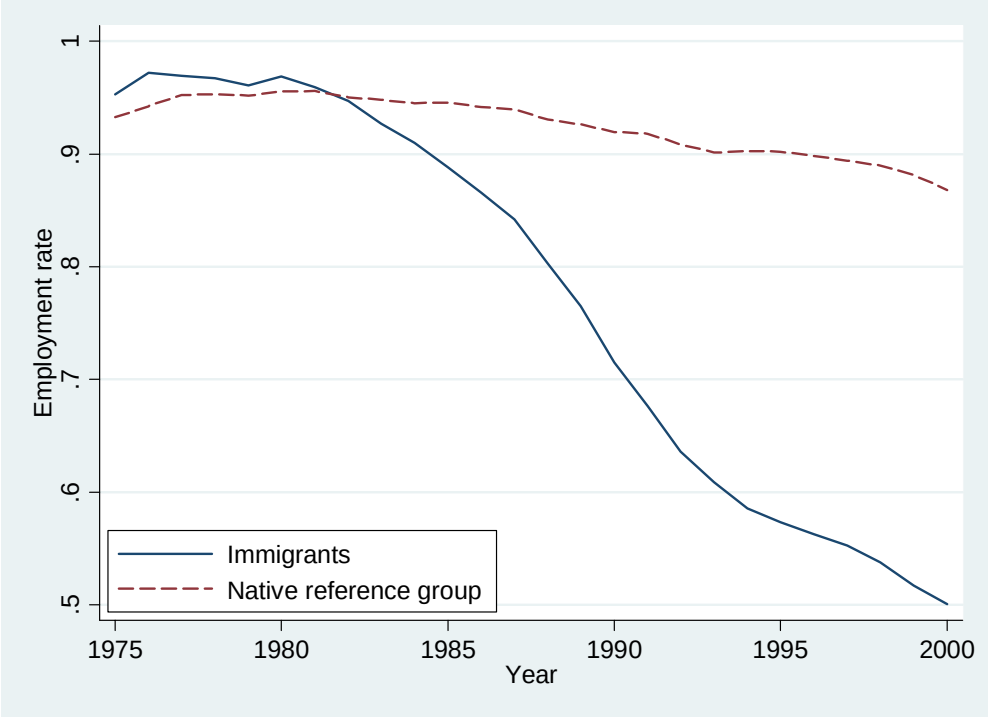
	Immigrants from Pakistan, Turkey, India and Morocco, arrived 1971-75	Matched group of Norwegian born
Birth cohorts		
1936-40	0.123	0.113
1941-45	0.227	0.222
1946-50	0.390	0.404
1951-55	0.260	0.261
Country of birth		
Pakistan	0.646	
Turkey	0.155	
India	0.134	
Morocco	0.065	
Year of arrival in Norway		
1971	0.354	
1972	0.119	
1973	0.131	
1974	0.220	
1975	0.176	
Educational attainment		
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
Marital status		
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.

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. Table 1 lists 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 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

[4] Old-age and disability pensions, capital gains, interest income, etc., are excluded from the base.

Figure 1: Trends in employment 1975-2000; male immigrants from Pakistan, Turkey, India, and Morocco, born 1936-55 and arrived in Norway 1971-75, and native reference group.



Note: Sample sizes are 2,553 immigrants and 28,720 natives.

attainment is missing for about 15 percent of the immigrant sample.[5] Very few of the immigrants are unmarried and close to 94 percent of the married immigrant 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).

In Figure 1, we plot the employment shares of the labor migrant and native reference samples by calendar year over the 1975-2000 period. More than 95 percent of the labor migrant group was employed 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 started a steady decline and fell to 50 percent by

year 2000. The employment rate in the native reference group also started a slow decline about the same time, but the slope was much smaller with about 87 percent of the native group employed by the end of the sample period.

2.2. Where have all the (previously) employed immigrants gone?

Underlying our micro data base, various administrative registers provide information on welfare and public transfers as well as program participation. To examine the economic status 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, this exercise provides useful information about those not employed. Appearance in other data registers eliminates non-registration of earnings and unregistered return migration as explanations for the low 2000 employment rates observed for the cohort of labor migrants.

Table 2 reports the fractions of the immigrant and native samples that were registered unemployed and/or transfer recipients in 2000.[6] 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 registered unemployed during the year, compared to 37 percent of the native males. As many as 44 percent of the immigrants received a permanent disability pension, compared to 15 percent of the natives. This major difference between the two groups largely reflects variation in employment status, although immigrants were more likely to receive transfers even conditional on employment status.

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[5] Educational attainment among the foreign-born is collected from registers of Norwegian educational institutions or from two surveys administered by Statistics Norway to all resident immigrants without any Norwegian schooling in 1989 and 1999.

[6] 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. Because unemployment benefits enter the base for calculation of pension credits, we run the risk of misclassifying some unemployed individuals as being employed. Time limits on the benefit reduce the importance of this data problem, however.

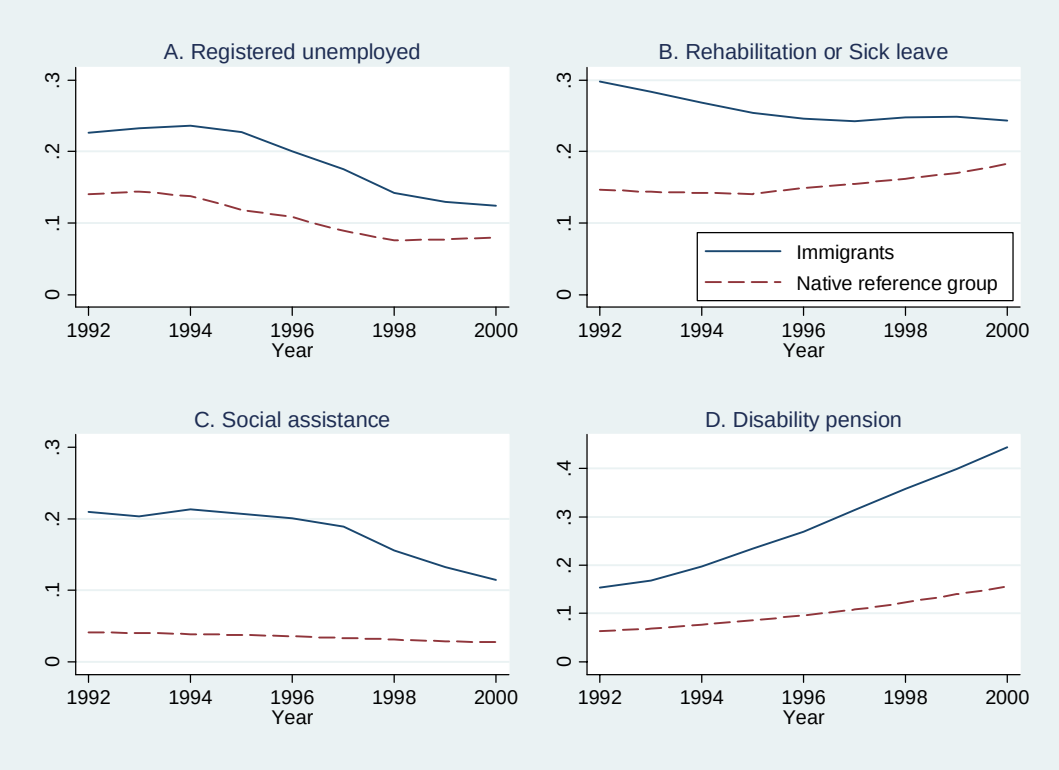
Table 2: Year 2000 Rates of Unemployment Incidence, Sick Leave, Rehabilitation, Disability Pension, and Social Assistance; Males Aged 45 to 64

	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

Note*: Unemployment* (incidence): appearance at least once in the end-of-month unemployment registers as full-time or part-time unemployed or active labor market program participant. *Long-term sick leave*: receipt of state sick leave benefits for medical leaves exceeding sixteen working days. Only those with a job are eligible for this transfer. *Rehabilitation*: recipient of cash transfers related to vocational or medical rehabilitation. *Disability pension*: receipt of a permanent disability pension, unconditional on degree of disability. Entitlement is subject to a medical test, but prior studies show that the program served as a common exit route to early retirement during the recession of the early 1990s (Dahl et al., 2000). *Social assistance*: recipient of means-tested support in form of a cash transfer or, less commonly, a loan during 2000.

The data underlying the descriptive statistics in Table 2 are available from 1992 onwards. In Figure 2, we display the trends in registered unemployment and participation in the various transfer programs over the 1992-2000 period. Unemployment and welfare program participation rates were consistently higher for immigrants compared to natives throughout the period, but the figure illustrates a compositional change taking place over the decade. High unemployment and extensive participation in sickness and rehabilitation programs stand out from panels A and B when we look at the immigrants' experiences during the first half of 1990s. Social assistance was also common as more than one in five immigrants received this benefit. Over time, disability retirement has gradually replaced other social security transfers. Presumably, many immigrants with long unemployment spells and

Figure 2: Unemployment and transfer program participation 1992-2000, by immigrant status



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

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 panel D, the declining pattern of immigrant employment (displayed in Figure 1) is mirrored by a sharply rising trend in disability retirement.

Social assistance rates among immigrants drop towards the end of the decade (see panel C). 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,

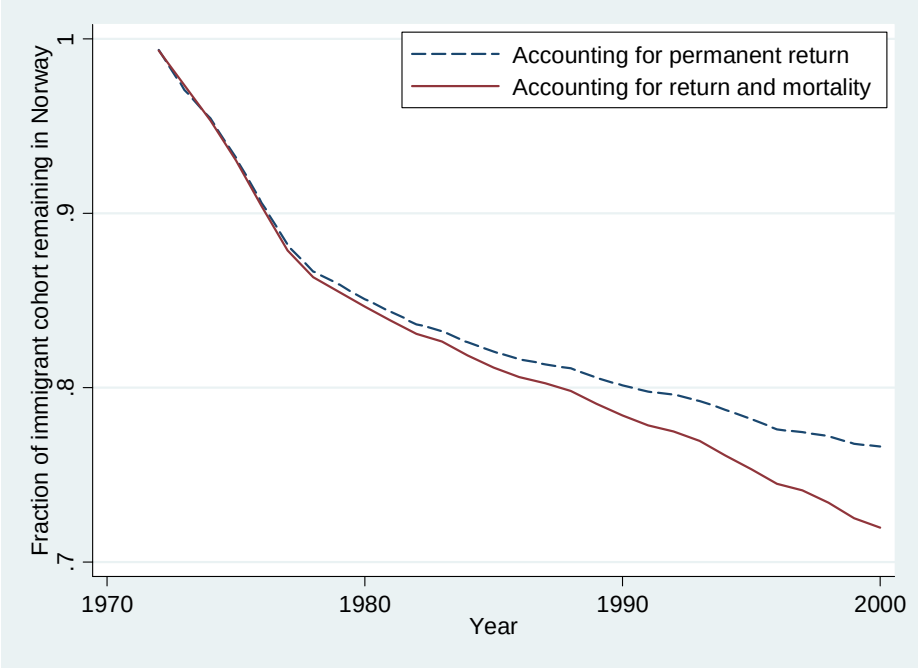
with the economically more favorable disability retirement replacing reliance on social assistance. The finding underscores the importance of considering the multitude of programs that make up the welfare state when assessing immigrant-native differences in welfare participation (Borjas and Hilton, 1996).

2.3. 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 original 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. 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

Figure 3: Fraction of original immigrant cohort not permanently outmigrated or dead



Note: Sample size is 3,564.

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 3, 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. 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.[7] Because we

[7] 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.

focus on those who remained in Norway in 2000, permanent outmigrants are not captured by 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.

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 the 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 immigrant-native difference in non-employment propensities into differences in *incidence*, on the one hand, and *persistence*, on the other. The set-up also allows the degree of state duration dependence to differ between the two groups. The model specifies yearly transitions between the states of employment and non-employment within the framework of a discrete-time duration model. 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 $l(.)$ be a logistic probability function, i.e., $l(a) \equiv \exp(a)/\left(1+\exp(a)\right)$. The transition probabilities are then modeled as

$$
\begin{aligned}
&P(y_{jt}=0 \mid y_{jt-1}=1) \\
&= l\left(\begin{array}{l}\left(\alpha_i^1 I_j + \alpha_n^1 (1-I_j)\right) A_{jt} + \beta_i^1 I_j YSM_{jt} + \left(\delta_i^1 I_j + \delta_n^1 (1-I_j)\right) E_j \\ +\gamma^1 R_{jt} + \sigma^1 CY_{jt} + (\varphi^1 + \varphi_i^1 I_j) u_{jt} + \left(\lambda_i^1 I_j + \lambda_n^1 (1-I_j)\right) D_j + \psi^1 I_j + v_j^1\end{array}\right), \\
&P(y_{jt}=1 \mid y_{jt-1}=0) \\
&= l\left(\begin{array}{l}\left(\alpha_i^2 I_j + \alpha_n^2 (1-I_j)\right) A_{jt} + \beta_i^2 I_j YSM_{jt} + \left(\delta_i^2 I_j + \delta_n^2 (1-I_j)\right) E_j \\ +\gamma^2 R_{jt} + \sigma^2 CY_{jt} + (\varphi^2 + \varphi_i^2 I_j) u_{jt} + \left(\lambda_i^2 I_j + \lambda_n^2 (1-I_j)\right) D_j + \psi^2 I_j + v_j^2\end{array}\right),
\end{aligned}
\tag{1}
$$

where the subscripts (i,n) are used to denote immigrant and native, respectively, I_j is a dummy variable for immigrant status, A_{jt} is a set of dummy variables for age (21,22,…,64); YSM_{jt} is a set of dummy variables for years since migration (3,4,…,29); R_{jt} is a set of dummy variables for (seven) regions in Norway; CY_{jt} is a set of dummy variables for calendar year; E_j is a set of dummy variables for educational attainment (≤ 9, 10-11, 12, 13-15, ≥ 16, missing); D_{jt} is a set of dummy variables indicating continuous duration in the present state (1,2, ≥ 3 years), and u_{jt} is the rate of local unemployment relevant for individual j. All of these variables (except for immigrant status and educational attainment) are time varying. In addition, each individual is characterized by the unobserved time-invariant covariates (v_j^1, v_j^2). Note that the calendar year (CY_{jt}) and region (R_{jt}) dummy variables are assumed to have the same impact on (the log-odds ratios of) immigrants and natives. Otherwise, the explanatory variables are allowed to affect employment transitions of the two groups differently. The assumption of a common calendar year effect is key for identification of the effects of years since migration, YSM_{jt} (Borjas, 1999). Years since migration equals the difference between calendar year of observation and year of arrival, and we have close to perfect collinearity

among the variables YSM_{jt} and CY_{jt} for immigrants because they all entered the country within a short calendar time period (1971-1975). We nevertheless allow for differential responsiveness of immigrants and natives to economic fluctuations through the interaction of local unemployment and the immigrant dummy variable (Bratsberg et al., 2006a).

The duration model in equation (1) bears a strong resemblance to a dynamic discrete panel data model with third-order state dependence. Our model is slightly more restrictive, however, since past realizations of the dependent variable are assumed to be relevant only insofar as they provide information about the duration of the ongoing employment or non-employment spell.

At first glance, the model set-up appears to involve an initial conditions problem related to the distribution of initial states and durations. Note, though, that the population under study consists of a group of labor immigrants, who *by definition* were employed around the time of entry. For virtually all of them, this initial employment spell also had duration of at least three years. Hence, we circumvent the initial conditions problem by defining a labor immigrant in this context as a person who came to Norway to work, and then remained employed for at least three years (we only lose 5 of the 2,553 immigrants as a result of this restriction, i.e., 0.2 percent of the sample). Similarly, we use the first occurrence of a three consecutive years with employment as the event that triggers entry into the native comparison sample (we lose 145 of the 28,720 comparison persons as a result of this restriction, i.e., 0.5 percent of the sample). Given this sampling scheme, all of the individuals start out in the sample as employed, with the employment spell having lasted three years, and our model may be viewed as conditional on such an event having occurred.

Let Y_j be the set of outcomes observed for individual j during the observation window from 1971 to 2000. The likelihood of observing a particular sequence of these outcomes is

$$L_j(v_j^1, v_j^2) = \prod_{t \in Y_j} \left\{ \begin{array}{l} y_{jt-1}\left[\left(P(y_{jt} = 0 \mid y_{jt-1} = 1) \right)^{1-y_{jt}} \left(1 - P(y_{jt} = 0 \mid y_{jt-1} = 1) \right)^{y_{jt}} \right] \\ \times (1 - y_{jt-1}) \left[\left(P(y_{jt} = 1 \mid y_{jt-1} = 0) \right)^{y_{jt}} \left(1 - P(y_{jt} = 0 \mid y_{jt-1} = 0) \right)^{1-y_{jt}} \right] \end{array} \right\}, \quad (2)$$

where the two probability expressions are given in Equation (1). Since Equation (2) contains the two unobserved characteristics (v_j^1, v_j^2) it cannot be used directly in a data likelihood function. It seems likely that the distribution of time-invariant unobserved characteristics is correlated with other observed time-invariant explanatory variables in the model, i.e., educational attainment and immigrant status. However, because the focus here is on the dynamic properties of the transition rate processes, a greater concern is unobserved heterogeneity that is *not* "captured" by any of our observed explanatory variables. It is well known that unaccounted-for unobserved heterogeneity will produce bias in the estimated degree of duration dependence (towards negative duration dependence). This source of bias can be eliminated by means a random effects model. We therefore assume that (v_j^1, v_j^2) are random drawings from a common bivariate probability distribution (keeping in mind that some of the coefficients attached to observed explanatory variables cannot be assumed to have a purely causal interpretation).

In order to eliminate the two unobserved covariates from the likelihood function, we take the expectation of individual likelihood contributions. However, we do not impose any unjustified assumptions regarding the statistical distribution of this heterogeneity. Instead, 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 takes the form

$$L(Q) = \prod_{j=1}^{N} \sum_{q=1}^{Q} p_q L_j(v_q^1, v_q^2), \quad \sum_{q=1}^{Q} p_q = 1, \quad (3)$$

where (v_q^1, v_q^2) is the location vector of support point *q*, and p_q is the associated probability. Our computational strategy follows the procedure outlined in Gaure *et al.* (2007).[8] We first maximize Equation (3) 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. As a result of this process we end up with a model containing 8 support points in the heterogeneity distribution.[9] In total, the model contains 249 unknown parameters, 226 attached to observed characteristics and 23 describing the unobserved heterogeneity distribution. Gaure *et al.* (2007) show that standard statistical inference, based on the assumption of joint normality, can be made regarding parameters attached to observed characteristics, *as if* the number of support points in the heterogeneity distribution was known a priori.

4. Results

Given our extensive use of dummy variables in the empirical model, it is difficult to interpret parameter estimates for each variable in isolation. Most of the results presented in this section therefore either take the form of simulated employment patterns based on the estimated model, or of transition probability profiles generated for "representative" individuals. In order to provide statistical confidence intervals for the simulated patterns, we apply the parametric bootstrap; i.e., we make repeated drawings from the (multivariate normal) distribution of

[8] See also www.frisch.uio.no/NPMLE.html.

[9] We have also estimated completely separate models for immigrants and natives. These models ended up requiring 8 support points for natives and 5 points for immigrants. For the immigrant model, it was not possible to identify effects of calendar time and years since migration simultaneously. Apart from that, the coefficients were very similar to those reported in the present paper. Complete results for the separate models are available upon request.

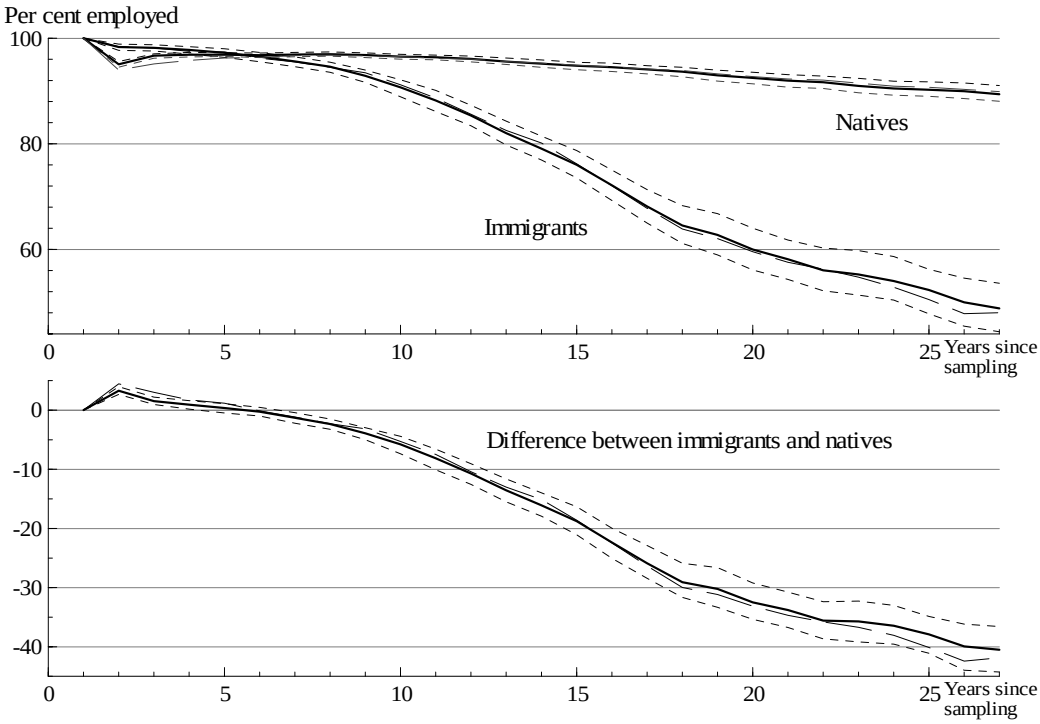
parameter estimates and use them in the simulation exercises.[10] Each simulation result presented in this section is based on 100 drawings/simulations, and 90 percent confidence intervals are constructed by removing the five percent most extreme results at each end. Confidence intervals for the transition probability profiles are generated by conditioning on a (representative) transition probability for a reference characteristic, and we then use the computed standard errors to calculate confidence intervals. Only a few selected parameter estimates are presented in this section. Some of the remaining estimates are examined in the next section, where we discuss alternative explanations for our key findings. A complete list of parameter estimates, with standard errors, is provided in the Appendix.

4.1. Employment profiles of immigrants and natives

In Figure 4, we compare profiles resulting from repeated simulations based on the estimated model with the observed employment patterns of immigrants and natives. The simulated profiles are reported with 90 percent confidence intervals. The profiles are drawn with respect to "years since sampling"; i.e., years after each individual's first (three-year) employment observation in the dataset, normalized such that year 1 is the final year of the pre-conditioned employment spell. For immigrants, this corresponds closely to years since migration minus two. For the native reference group, this time dimension has no particular interpretation beyond that it facilitates a direct comparison with the immigrant group. A first point to note from Figure 4 is that the model performs well in terms of replicating the observed

[10] In simulations, we make drawings from the vector of 226 parameters attached to observed covariates only, since the parameters describing the unobserved heterogeneity are not normally distributed; see Gaure *et al.* (2007). We thus condition on the individual drawings of unobserved heterogeneity. The drawings of parameter estimates are made by means of the Cholesky decomposition; that is, let L be a lower triangular matrix, such that the covariance matrix is $V = LL'$. Let z_s be a vector of 226 drawings from the univariate standard normal distribution collected for trial s, and let $\hat{b}$ be the vector of point-estimates. The parameters drawn for trial s are then given as $b_s = \hat{b} + Lz_s$.

Figure 4: Simulated and observed employment rates by years since sampling

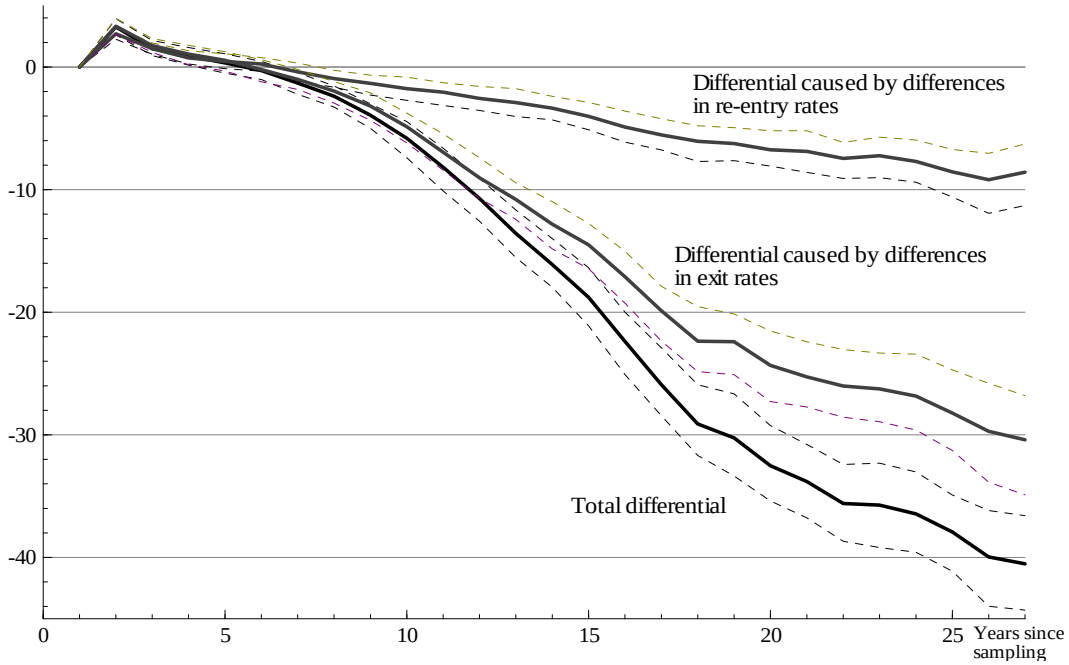


Note: Solid lines denote mean employment rates from the model simulations; dotted lines upper and lower boundaries of 90 percent confidence intervals; and long-dashed lines display the observed fractions in the data.

employment histories. A second point to note is that the large differences that evolve over time between employment of immigrants and natives are not only substantively, but also statistically, significant. For example, evaluated at 25 years, the 90 percent confidence interval for the employment differential runs from 35 to 41 percentage points.[11]

[11] Note that the largest difference between observed employment rates of immigrants and natives in the estimation sample is 41 percent, which is 3 percentage points more than that in Figure 1. The reason for this is that our sampling scheme matched natives to the immigrant sample on the basis of birth year, and not age at the time of the first employment spell in Norway. On average, natives in the estimation sample are 3.1 years younger than immigrants at the "time of sampling." As described in Section 3, this is fully controlled for in the estimation (through the inclusion of age dummies), but it nevertheless implies that employment profiles plotted by "years since sampling" will slightly exaggerate the difference between immigrants and natives (compared to the descriptive pattern in Figure 1). A comparison of groups with the same average age can be obtained by comparing the employment rates for natives in year s with immigrants in year s-3.

Figure 5: The immigrant-native employment differential decomposed



Note: Solid lines depict mean employment differentials in each set of simulations and dotted lines are upper and lower boundaries of 90 percent confidence intervals.

4.2. Exit, re-entry, and duration dependence

Figure 5 disentangles the immigrant-native employment differential into differences in exit and re-entry rates. The decomposition is obtained by making counterfactual simulations, such that immigrants are treated *as if* they were natives in the exit and re-entry processes, respectively. This exercise clearly shows that differences in exit rates are much more important than differences in re-entry rates for explaining the observed employment patterns. Towards the end of the period, 75 percent of the difference in employment between immigrants and natives can be attributed to differences in exit rates alone, 20 percent to differences in re-entry rates alone, and 5 percent to the interaction of the two.

Table 3: Selected parameter estimates (with standard errors)

	Immigrants				Natives			
	Exit		Re-entry		Exit		Re-entry	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
A. Duration dependence – time spent in present state								
1 year	0.587	0.076	1.094	0.085	1.332	0.030	0.869	0.039
2 years	0.443	0.093	0.599	0.092	0.944	0.036	0.423	0.038
3 years	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
B. Educational attainment								
Less than 10 years	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
10-11 years	0.045	0.088	0.467	0.106	-0.272	0.028	0.310	0.037
12 years	-0.357	0.116	0.565	0.142	-0.775	0.041	0.470	0.061
13-15 years	-0.232	0.122	0.532	0.166	-0.420	0.045	0.324	0.065
16+ years	-0.154	0.103	0.654	0.129	-0.775	0.041	0.470	0.063
Not available	0.355	0.094	0.135	0.112	0.352	0.154	0.017	0.190
C. Local unemployment rate								
Common effect	3.410	0.648	-1.974	0.949	3.410	0.648	-1.974	0.949
+ interaction with immigrant dummy	4.297	1.811	-5.827	2.680				

There is a significant difference between immigrants and natives with respect to duration dependence; see Table 3, panel A. Extended periods outside employment entail declining re-entry probabilities for both immigrants and natives. Given an initial re-entry probability of 50 percent, the parameter estimates reported in Table 3 imply a reduction during the next three years of 20 percentage points for natives and 25 percentage points for immigrants. For natives, the exit probability is high immediately following a spell of non-employment, but drops very quickly as the new employment relationship extends beyond one year. According to the parameter estimates reported in panel A, a 10 percent initial exit probability for natives declines to less than 3 percent after three years of employment, ceteris paribus. For an immigrant with exactly the same initial exit probability, the decline is only to 6 percent. As these parameters are identified by re-entering employees, the patterns suggest

that immigrants do not experience the same reduction in non-employment propensity from lasting employment spells as do natives.

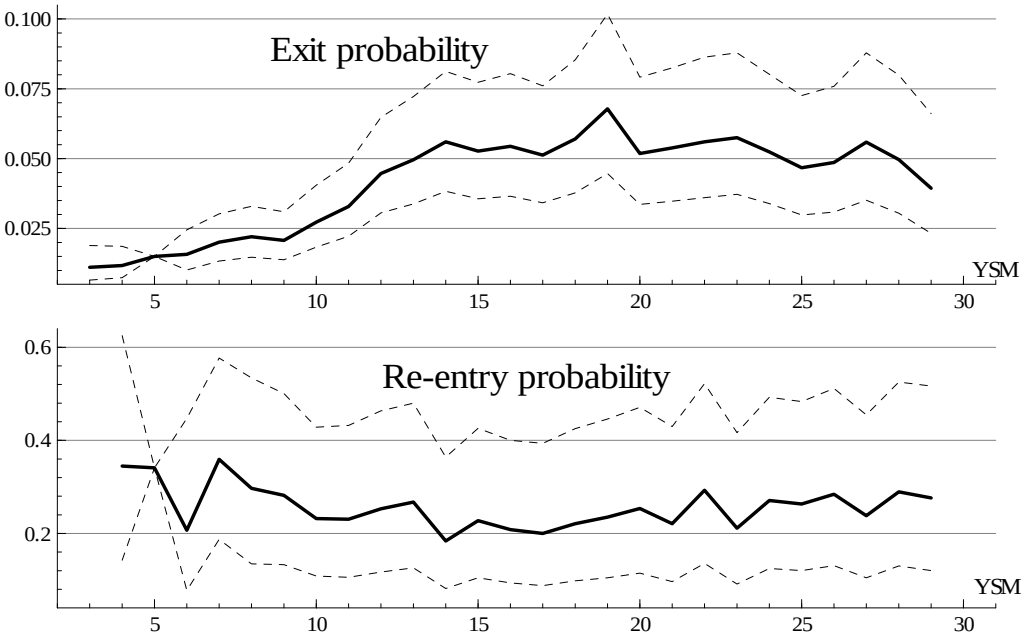
4.3. Returns to human capital

For natives, the exit rate declines, and the re-entry rate rises, with educational attainment; see Table 3, panel B. For the exit rate, the effects of education are rather strong. At typical levels of exit, the parameter estimates reported in the table imply that the exit rates are approximately twice as high for natives with compulsory schooling only than for those who completed high school (12 years) or obtained a university degree (at least 16 years). For immigrants, educational attainment has less impact, particularly on the exit rate. These findings indicate that it may have been difficult for immigrants to take full advantage of their schooling in the Norwegian labor market.

4.4. Labor market dissimilation or differential age effects?

Figure 6 displays the estimated impact of years since migration (YSM). Although this profile is estimated with considerable statistical uncertainty (caused by the difficulty of disentangling YSM from age effects), the figure clearly shows that the exit rate out of employment rises significantly with years since migration, conditional on age and calendar year. Hence, the data give no indication of immigrant assimilation, in the sense that their attachment to employment becomes stronger – relative to that of natives – with time in the host country. To the contrary, the plot bears witness of a strong *dissimilation* process. According to the point estimates, the probability of exiting the labor market from one year to the next increases, ceteris paribus, from less than 2 percent during the first 10 years in the country, to more than 5 percent after

Figure 6: Exit and re-entry probabilities by years since migration

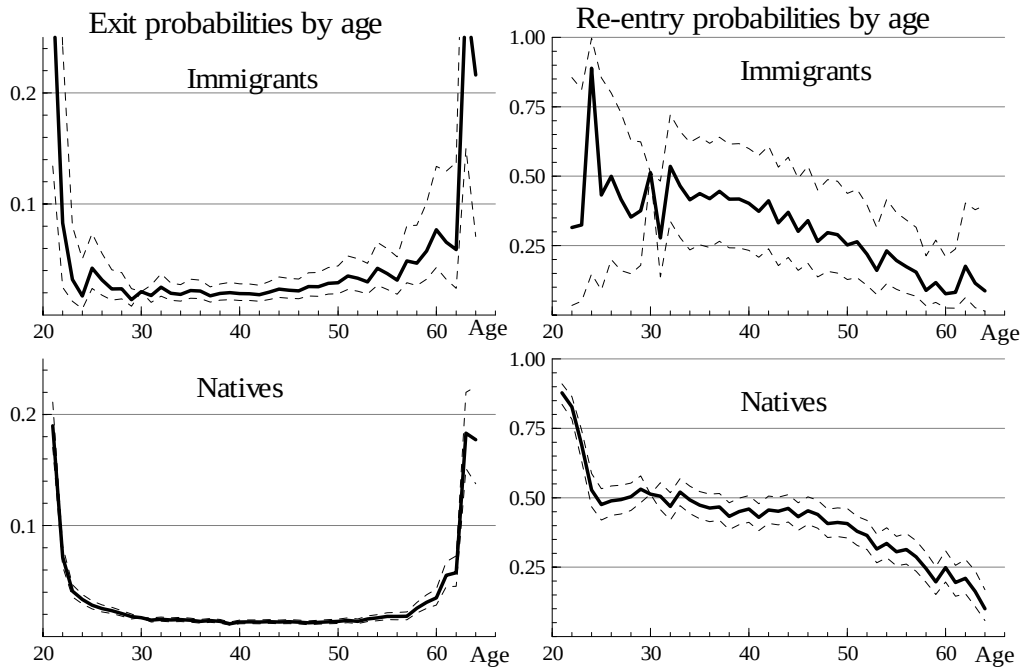


Note: Dotted lines indicate 90 percent confidence intervals. The probabilities are normalized to match the mean observed transition rates at YSM=5.

15 years. The re-entry probability, on the other hand, seems to be stable with respect to years since migration.

In figure 7, we plot the estimated impact of age on exit and re-entry for immigrants and natives, respectively. For both groups do the exit probabilities exhibit strongly U-shaped patterns with high exit rates at young and old ages, while the re-entry rate declines with age. Both the exit and re-entry profiles are fairly similar for immigrants and natives. The rise in the exit rate associated with aging appears somewhat earlier for immigrants (around the age of 45) than for natives (around the age of 55), however, consistent with a pattern in which immigrants who leave employment are more likely to enter an absorbing state such as disability pension retirement.

Figure 7: Exit and re-entry probabilities by age



Note: Dotted lines indicate 90 percent confidence intervals. The probabilities are normalized to match the mean observed transition rates at age 30, for immigrants and natives, respectively.

5. Explanations

The strong drop in employment rates of minority labor immigrants over the lifecycle, accompanied by high propensities to collect social security transfers such as disability pensions and rehabilitation assistance, raises concern 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) and whether the circumstances faced by the any future non-European immigrants are comparable to those of the cohort under sturdy. Based on the model estimated in the previous section, as well as supplementary statistical analyses and additional evidence, this section contains a discussion of what our data can – and cannot – tell us about possible explanations.

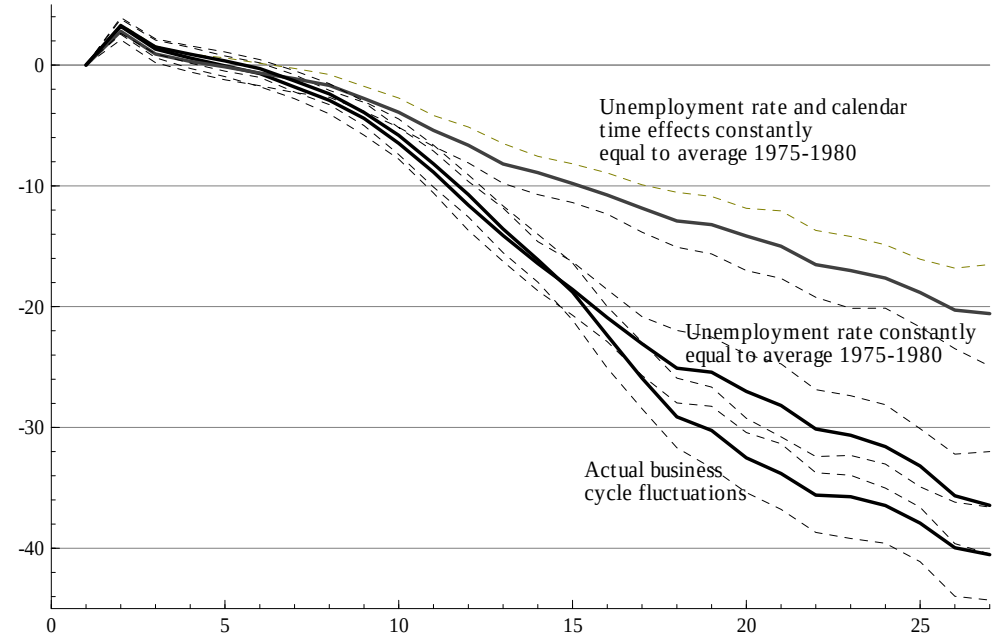
Figure 8: Unemployment rates in Norway 1971-2000

Note: Standardized unemployment rates. Source: OECD.

5.1. The role of business cycle fluctuations

In Norway, the 1970s were characterized by high labor demand and extremely low unemployment; see Figure 8. During the 1980s, however, unemployment started to rise and – apart from a brief recovery in the mid 1980s – rose steadily until it reached its peak level in 1993. Economic fluctuations enter into the statistical model presented in the previous sections both through the calendar year dummies and through the inclusion of the local unemployment rate (given the difficulty of interpreting calendar time effects in isolation, we do not report these here; they are listed in the Appendix). Differential responsiveness of immigrants and natives to economic conditions is allowed for only through the effect of the local unemployment rate; see Table 3, Panel C. The estimation results indicate that the responses indeed differ for the two groups, with immigrant transition probabilities showing more cyclicality than those of natives. To illustrate, evaluated at an initial exit rate of 3 percent, a 3

Figure 9: Immigrant-native employment differential under alternative cyclical environments



Note: Dotted lines indicate 90 percent confidence intervals.

percentage point rise in the local unemployment rate yields an increase in the native exit rate of 0.3 percentage points, while the immigrant exit rate increases by 0.8 percentage points. Evaluated at a re-entry rate of 50 percent, the same increase in unemployment reduces the native re-entry rate by 1.5 percentage point and the immigrant re-entry rate by as much as 6 percentage points.

Figure 9 illustrates the potential impact of business cycles on the immigrant-native employment differential, by comparing the results from simulations made under the counterfactual assumption that the favorable cyclical conditions at the time of immigration continued throughout the sample period with simulations made using actual cyclical conditions. We examine two alternative counterfactual cyclical patterns. The first holds both unemployment rates and calendar time effects constant at their 1975-1980 averages. Realizing that calendar time effects not necessarily represent cyclical fluctuations only, but also other

time trends in the data, we also study the impact of keeping only the local unemployment rates constant at their 1975-1980 average. Our simulation results indicate that the impact of cyclical fluctuations is much larger for immigrants than for natives. Had the favorable employment conditions of the late 1970s prevailed, the employment differential at the end of the sample period would have been half of the observed difference. The predicted immigrant employment rate after 27 years is raised from 48 to 76 percent, and the native rate is raised from 88 to 96 percent (not shown in the figure). Had only local unemployment rates kept constant at their 1975-1980 average, the employment differential would have been reduced by about four percentage points (10 percent).

Given that calendar year effects are restricted to be the same for immigrants and natives, the large impact of holding calendar effects constant may appear surprising. To a certain extent, the finding simply mirrors the fact that the scope for increasing employment rates is smaller the closer they already are to unity (which is captured in the functional form of the probability function). But it also reflects that the long-term effects of an economic slowdown are more severe for immigrants than for natives. The reasons for this are, first, that immigrants more rapidly become disconnected from the labor market through a deterioration of re-employment prospects (i.e., they face a stronger negative duration dependence in re-entry rates), and, second, that even when they obtain a new job, it takes longer for the job to become secure (i.e., they have weaker negative duration dependence in exit rates than natives).

5.2. Differences in jobs and immigrant-biased technological change?

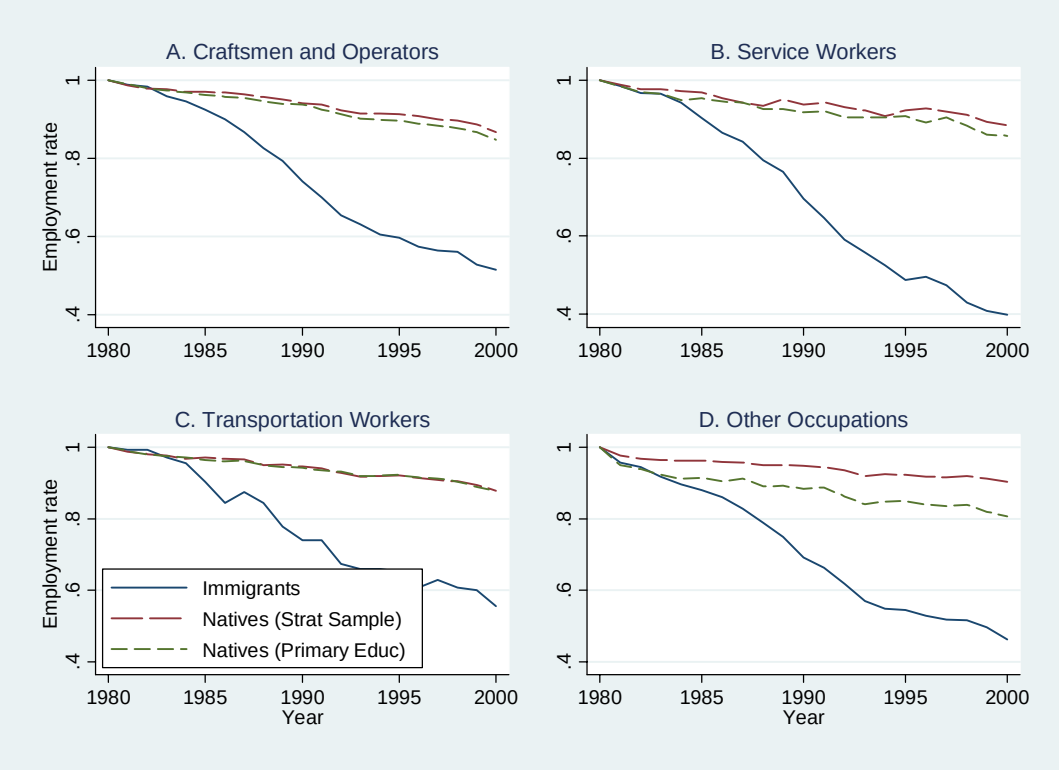
One potential explanation for the poor employment performance of immigrants holds that skill-biased technological change (*SBTC*) has reduced the demand for low-skilled manual labor and increased the demand for communication skills. For example, Autor et al (2003)

argue that computer technologies have substituted for workers performing tasks that can be accomplished by following explicit rules, and increased demand for workers performing non-routine problem solving and complex communications tasks. 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.

Our empirical checks of these explanations build on additional information about job and employment characteristics collected from the 1980 Census for the members of our analysis populations who were employed in 1980.[12] We first look at how immigrant and native employment evolved during the 1980s and 1990s *within* broadly defined occupations, where we stratify the samples by the three major occupational affiliations of immigrants in 1980 (plus a rest category),[13] and consider the within-group employment profiles of immigrants and natives with identical age distributions; see Figure 10. If job-specific technological and structural change lies behind the decline in immigrant employment, the immigrant-native differential during the late 1980s and 1990s should disappear when we

[12] Because we could not match the full sample to valid census records, the merged sample is smaller than that used in the prior section. Moreover, the matching with census records yielded a slightly older immigrant sample, and we therefore re-stratified the native reference group to match the age distribution of the new sample.
[13] Nearly half (46.1 percent) of the immigrant group was employed in craft and operator occupations (mainly in manufacturing industries), 21.3 percent held service jobs (typically in restaurants), and another 7.3 percent had transportation jobs in 1980.

Figure 10: Employment profiles of immigrants and natives, by 1980 occupation



compare workers with similar jobs. The relative decline of immigrant employment is, however, evident within all four occupational groups. In fact, out of the four, the decline in immigrant employment was strongest among those who in 1980 worked in the service sector, where *SBTC* presumably has been less prevalent than in other sectors.

Figure 10 also displays employment profiles for natives with compulsory education only within each occupational group. If *SBTC*, which has reduced the demand for low-educated workers, represents an important explanation behind the employment dissimilation of immigrants, we would further expect the immigrant-native differential to diminish when the native comparison group is restricted to individuals with compulsory education. This exercise also captures the notion that the formal education of the immigrant cohort may overstate their human capital in the Norwegian labor market, an implication of our findings in Table 3. If education is not perfectly transferable across countries, matching on years of

schooling may give a positive qualification bias in favor of the native comparison group. By comparing the immigrant cohort to natives with compulsory schooling only, we thus provide an upper bound on the contribution from differences in educational attainment to the employment differential. It is evident from Figure 10 that even when we restrict the comparison group to natives with primary education (represented by short-dotted lines in the figure), only a limited part of the immigrant-native employment differential can be explained by differences in valuation of schooling. Thus, a relative decline in demand for low-educated workers, or an overstatement of immigrant educational qualifications, does not fully explain the sharp decline in relative employment of immigrants. It is clearly the case, though, that the drop in employment over the sample period is higher for natives with compulsory education only than for the comparison group matched on educational attainment.

Even though there is a large immigrant-native employment differential within each of the occupational groups depicted in Figure 10, it is clearly also the case that the labor immigrants disproportionately were recruited into jobs that, ex post, were associated with short expected employment careers. This is illustrated in Table 4, where we use linear probability model regressions to address the extent to which the native-immigrant employment differential in 2000 can be attributed to variation in job characteristics such as pay, occupational status, industry, or location 20 years earlier. Again, the analysis is based on those in the census-matched samples who were employed in 1980, and in panel A we report the coefficient of the immigrant indicator variable in the 2000 employment regressions. We see that the overall sample employment differential in 2000 of 0.406 is reduced to 0.392 when we condition on average pay between 1980 and 1984, to 0.384 when we condition on 1980 county of residence, and to 0.353 when we condition on industry and occupation in 1980 (at the 2-digit level). The differential falls even further, to 0.311, or by 23 percent, if we include

Table 4: Year 2000 Employment Differential and 1980 Job Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Coefficient of Immigrant	-.406	-.392	-.384	-.353	-.311	-.345	-.274
	(.008)	(.008)	(.012)	(.010)	(.013)	(.011)	(.015)
Adj R^2	.191	.208	.196	.216	.233	.198	.235
B. Oaxaca Decomposition using Native Coefficients							
i. Contribution of Endowment		-.010	.011	-.033	-.038	-.061	-.078
		(.001)	(.012)	(.007)	(.012)	(.004)	(.012)
ii. Percent of Overall Difference		2.5	-2.8	8.1	9.3	15.0	19.2
		(0.3)	(3.0)	(1.8)	(3.1)	(1.1)	(3.1)
C. Oaxaca Decomposition using Immigrant Coefficients							
i. Contribution of Endowment		-.023	-.128	-.083	-.218	N/A	-.218
		(.004)	(.046)	(.031)	(.055)		(.055)
ii. Percent of Overall Difference		5.7	31.5	20.4	53.6		53.6
		(1.0)	(11.3)	(7.7)	(13.6)		(13.6)
Controls:	None	Average Pay, 1980-1984	County (19)	Industry (41) and Occupation (69)	Industry, Occupation, County, and Pay	"Education"	Education, Industry, Occupation, County, and Pay

Note: Standard errors are reported in parentheses. Coefficient estimates are based on linear probability models; sample size is 11,230. In panel A, regressions are weighted so as to yield immigrant and native samples of equal size. In columns (6) and (7), immigrant schooling is set to equal to primary education.

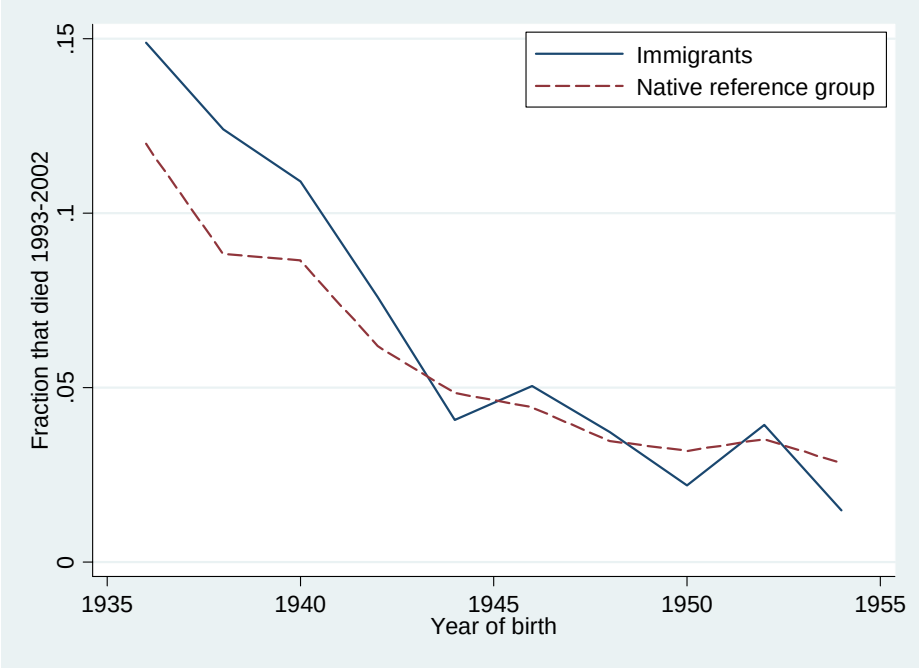
all of the job characteristics in the regression specification; see column (5). In column (6), we treat immigrants as if they all had primary education only while allowing for differential effects of educational attainment among natives (i.e., we restrict immigrant schooling effects to be zero and compare immigrants to natives with compulsory schooling). In this specification, the differential drops to 0.345, or by 15 percent. Even comparing immigrants to natives with primary education only, differences in pay, occupation, industry, and location in 1980 still explain almost twenty percent of the immigrant-native employment differential

which is down to 0.274 when the specification includes the full set of job characteristics; see column (7). According to these results, differences between immigrants and natives in observed job attributes and effects of education account for up to one third of the observed employment difference in 2000.

In Table 4, panels B and C, we take an alternative approach to understanding the 2000 employment differential and present results from Oaxaca decompositions. These decompositions assess the contribution of differences between immigrants and natives in 1980 job characteristics ("endowments") to the employment differential. But unlike the standard regression approach in Panel A, where coefficients of explanatory variables were restricted to be the same for the two groups, the Oaxaca decompositions allow for different effects of job characteristics for immigrants and natives. In general, results indicate that immigrants face stronger effects of job attributes than natives, consistent with the hypothesis that immigrant employment is more sensitive to changes in the economic environment than is native employment and that characteristics such as region and occupational affiliation are stronger employment determinants among immigrants than natives. The panels illustrate that 1980 job characteristics clearly matter, although only to a limited extent.

In sum, the finding that the decline in immigrant employment was greatest in service occupations casts doubt on skill-biased technological change as a powerful explanation of the observed employment patterns. Yet, we find that differences in 1980 job characteristics and low returns to immigrant schooling account for a substantial share of the employment differential in 2000. Even though skill-biased technical change and organizational changes may explain part of the immigrant-native employment differential, these factors cannot be the *sole* driving forces behind the sharp decline in relative immigrant employment.

Figure 11: Mortality 1993-2002, by immigrant status



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

5.3. Health and employability

Given the fact that a large fraction of the labor immigrants end up in 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 who were alive in 1992 (from when we are able to track mortality in administrative registers).

Figure 11 shows the cumulative 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. Given the ambiguous impact on the health status of survivors and the modest health differentials indicated by Figure 11, health is an unlikely candidate to explain the patterns of employment dissimilation among immigrants.

5.4. Cultural retirement determinants

The short employment careers may reflect that some of labor immigrants 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). Moreover, recent studies of labor force participation in the United States attribute part of the variation to cultural factors. For example, Antecol (2000) finds that patterns of employment in the immigrant population relate to employment rates in the home country, and Fernández (2007) shows that hours worked among second-generation American women correlate with cultural proxies such as female labor force participation and survey-based evidence on attitudes towards women's work in the country of ancestry.

Employment patterns in the source countries of the immigrants covered by our study do, however, not lend support to the idea that the labor immigrants brought 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 migrant cohort 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 our native-born reference group, not the cohort of labor migrants.

5.5. Welfare program incentives

A generous welfare state may attract migrants with relatively high risks of becoming dependent on social security transfers. Even if the magnet effects are negligible, several aspects of the Norwegian welfare system tend to give the immigrant population weaker work incentives compared to apparently similar natives.[14] There are two kinds of 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 are temporarily out of work or become 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.[15] As a result, low-wage earners with many children can obtain effective replacement ratios that exceed 100 percent. This point is illustrated in Table 5, where we report actual disability pension payments and (alternative measures of) replacement ratios

[14] In addition, return migration may be even more selective, in the sense that migrants with a high risk of social security dependency are less likely to re-migrate. Moreover, work disincentive effects are likely to be reinforced by network effects transmitting information about welfare programs within the immigrant group (Borjas and Hilton, 1996; Bertrand et al., 2000).

[15] 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.

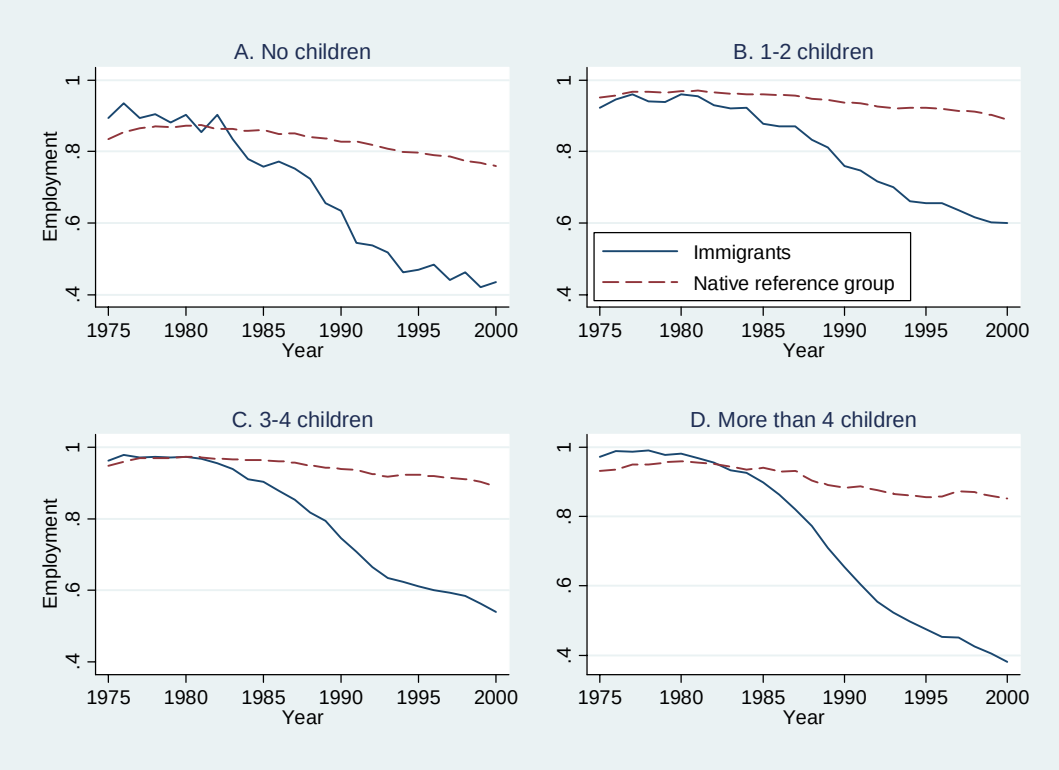
Table 5: Permanent disability pension benefits in 2000 relative to prior earnings

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

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 2*G* (i.e., the equivalent of NOK 98,180 in 2000).

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

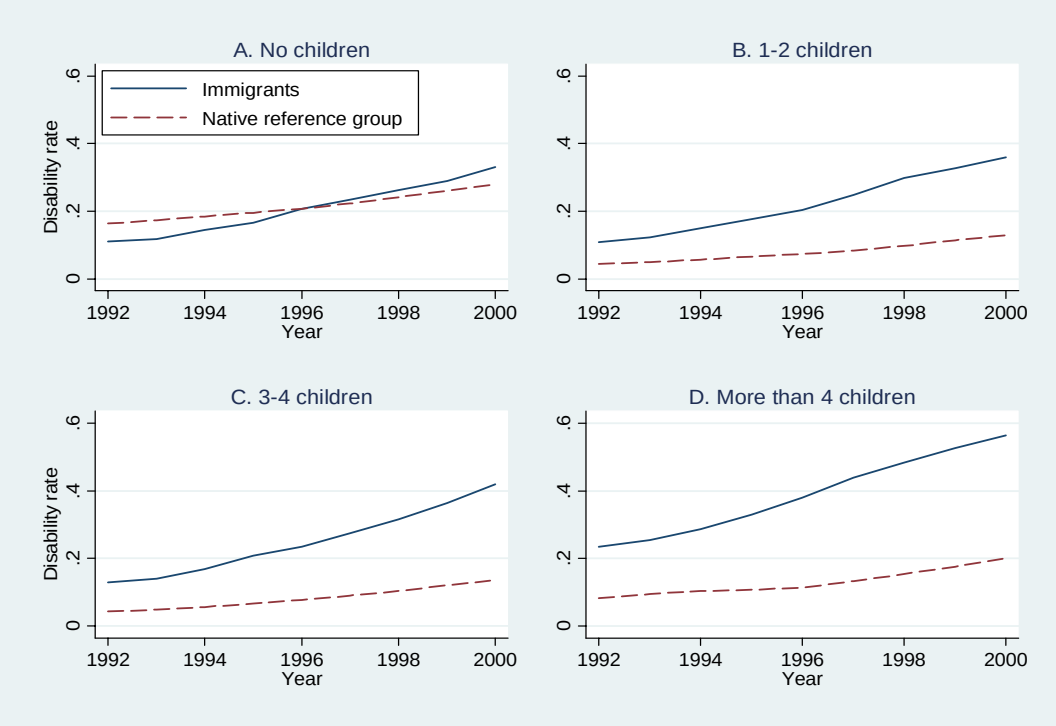
Figure 12: Employment patterns by number of children and immigrant status



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).

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 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. The generous child allowances induce a substantial difference in average work incentives for immigrants and natives. It turns out that while fewer than 10 percent of the men in the native control group have four or more children, this is the case for as many as 55 percent of the immigrant group.

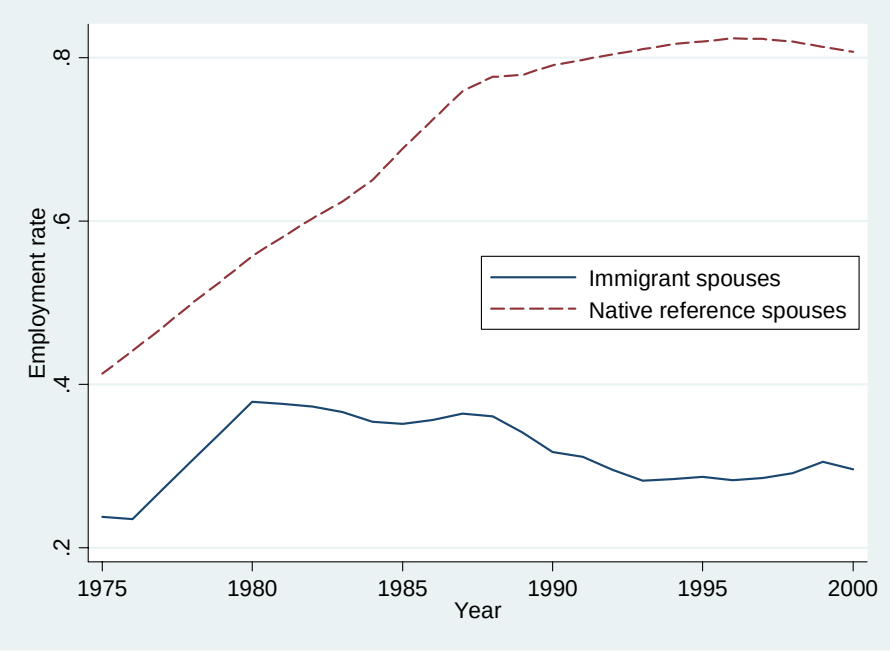
Figure 13: Disability retirement by number of children and immigrant status



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).

Figure 12 illustrates the association between employment patterns and the number of children for immigrants and natives, and Figure 13 provides a similar illustration of the relationship between disability retirement frequencies and number of children. While few in number, childless individuals have low employment rates and high disability rates both among immigrants and natives, presumably due to sorting. Given that there are children in the household, however, more children go hand in hand with lower employment rates and higher disability propensities. For natives, this association is rather weak. For the cohort of labor migrants, the correlation is strong. An interesting aspect of Figure 13 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, about twice the rate of immigrants without children. As around 30 percent of

Figure 14: 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 immigrants in fact have more than four children, this is a pattern with considerable implications. Differences in family structure and the strong work disincentives for heads of large households embedded in the disability insurance criteria seem to be an important part of the story behind the relative decline in employment among labor immigrants.

The labor immigrants under study not only tend to have many children, they frequently 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 Figure 14 where we look at the employment 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, compared to only 20 percent of the native comparison group. The extremely low labor market participation rates among the labor migrant 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. Fifty-five 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.

Given the welfare payment structure, differences in family composition, job opportunities and female employment patterns will contribute to much weaker work incentives among male labor immigrants compared to natives of the same age. One way to assess the overall effects of family structure is to consider the employment status and calculate the proportion of the immigrant-native differential that can be attributed to observable family characteristics. In Table 6, we follow the approach from Table 4 and present results from linear probability model regressions of employment status in 2000 on family characteristics. Panel A shows that conditioning on marital status, whether the spouse is a homemaker, and 9 indicator variables for number of children, reduces the differential substantially from 0.406 to 0.282. As was the case in Table 4, the Oaxaca decompositions in panels B and C suggest a greater role for differences in endowments when evaluated using coefficients from the immigrant regression. As shown in column (2), differences in family structure explain 14 percent of the immigrant-native employment differential when based on coefficients from the native regression (panel B), and fully 40 percent when based on the immigrant regression (panel C). The coefficient patterns may reflect that immigrants respond more strongly to incentives of the welfare system, or that family characteristics have a stronger effect on immigrants' incentives given their relatively low payoff in the labor market. In column (3), we add the 1980 job characteristics from the most extensive specification in Table 4, which reduces the immigrant-native employment differential by more than a half (from 0.406 to 0.187). According to Panel C, when based on immigrant coefficients, differences in the full set of family and job attributes explain 77 percent of the observed difference in employment between immigrants and natives. Finally, the last two columns of

Table 6: Year 2000 Immigrant-Native Employment Differential and Family Structure

	(1)	(2)	(3)	(4)	(5)
A. Coefficient of Immigrant	-.406	-.282	-.187	-.208	-.274
	(.008)	(.010)	(.015)	(.014)	(.015)
Adj R^2	.191	.235	.269	.254	.235
B. Oaxaca Decomposition using Native Coefficients					
i. Contribution of Endowment		-.051	-.110	-.099	-.078
		(.008)	(.015)	(.013)	(.012)
ii. Percent of Overall Difference		12.6	27.1	24.4	19.2
		(2.0)	(3.7)	(3.2)	(3.1)
C. Oaxaca Decomposition using Immigrant Coefficients					
i. Contribution of Endowment		-.161	-.314	-.277	-.218
		(.016)	(.055)	(.046)	(.055)
ii. Percent of Overall Difference		40.0	77.1	68.3	53.6
		(4.0)	(13.5)	(11.2)	(13.6)
Controls:	None (from Table 4)	Family Structure	Education, Industry, Occupation, County, Pay, and Family Structure	As (3), minus Industry and Occupation	As (3), minus Family Structure

Note: Standard errors are reported in parentheses. Family structure controls include married, spouse present; spouse homemaker; and 9 indicator variables for number of children. See also note to Table 4.

Table 6 compare the marginal effects of the occupation/industry variables versus the family structure controls. Ignoring family structure raises the immigrant-native differential substantially more than is the case for the occupation/industry controls, suggesting that welfare system incentives may explain more than unfavorable job opportunities. These explanations may interact, however, as the work incentives are particularly low for individuals for whom the market value of work is low.

6. Conclusions

Male labor migrants from developing countries who came to Norway during the early 1970s had extremely short employment careers compared to a matched reference group of natives. 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. Differential non-employment persistence also plays a role, particularly during economic downturns. The immigrant-native employment differential evolves directly as a function of years since migration, and does not stem from differences in age-employment profiles. With respect to labor force attachment, labor immigrants apparently go through a dissimilation process that may reflect a variety of underlying causal mechanisms.

We point out that the welfare system, with high benefit 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 by this study. In fact, household characteristics explain a surprisingly large fraction of the immigrant-native employment differential in 2000: conditioning on family size and spousal employment status reduces the predicted differential by 32 percent. But the inferior employment performance of immigrants cannot be explained by poor work incentives alone. Up to one third of the native-immigrant employment differential in year 2000 can be attributed to job types and local labor markets during the first years after arrival, in the sense that immigrants ended up in jobs with poor long-term employment prospects. We also identify 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 economic downturns. Many of the labor migrants under study fell out of the labor market during the two cyclical slumps that hit

Norway in 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 business cycle sensitivity of immigrant employment also points to skill-biased technological and organizational changes as probable sources of the observed differences in lifecycle employment of immigrants and natives. We fail to uncover strong support for this explanation, however. When we stratify the samples by aggregate occupational affiliation in 1980 and examine the within-group employment profiles of immigrants and natives with identical age distributions, we find similar employment differences between natives and immigrants across occupations. Actually, the immigrant-native employment differential is particularly large in the service sector where skill-biased technological change presumably has been less prevalent.

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 careers comparable to those of natives. Initial employment upon arrival is no guarantee for lifetime employment. The poor long-run performance of labor immigrants suggests that opening the border is not a panacea to solve the fiscal problems associated with an 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 is combined with a strategy to ensure a better and more stable utilization of the extra labor, although we do not hold the evidence to provide a recipe for such a strategy. Whatever the underlying reasons, the finding has important implications for appropriate assumptions in macro projections of the effects of increased immigration.

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Appendix Table A1: Nonparametric Maximum Likelihood Estimation Results, Employment Status Transitions

A. Parameters assumed to be common for immigrants and natives

	From employment to non-employment		From non-employment to employment	
	Coeff.	**S.E.**	**Coeff.**	**S.E**
Calendar year				
1971	0.1025	0.0767		
1972	0.1468	0.0735	-0.4394	0.1477
1973	-0.0156	0.0734	-0.2531	0.1337
1974	-0.0551	0.0709	-0.0864	0.1258
1975	0.0513	0.0684	-0.3949	0.1201
1976	-0.0956	0.0700	-0.0089	0.1159
1977	-0.2956	0.0728	-0.0195	0.1151
1978	-0.1377	0.0700	-0.0372	0.1168
1979	-0.0076	0.0689	-0.3224	0.1128
1980	Ref.		Ref.	
1981	-0.0055	0.0694	-0.2829	0.1126
1982	0.2935	0.0660	-0.5050	0.1128
1983	0.2387	0.0692	-0.6158	0.1093
1984	0.3106	0.0689	-0.6018	0.1123
1985	0.2539	0.0707	-0.5620	0.1097
1986	0.5125	0.0675	-0.5459	0.1082
1987	0.4741	0.0687	-0.7011	0.1079
1988	0.6907	0.0673	-0.9394	0.1099
1989	0.6415	0.0710	-0.8412	0.1132
1990	0.6612	0.0736	-1.0420	0.1155
1991	0.5235	0.0770	-1.0186	0.1172
1992	0.7729	0.0770	-1.0159	0.1214
1993	0.6291	0.0793	-1.2768	0.1226
1994	0.5196	0.0802	-0.9764	0.1199
1995	0.4596	0.0799	-0.9517	0.1195
1996	0.4333	0.0801	-1.1591	0.1206
1997	0.5386	0.0786	-1.0821	0.1179
1998	0.5796	0.0787	-1.0335	0.1184
1999	0.5674	0.0796	-1.1526	0.1205
2000	0.6631	0.0800	-1.1783	0.1209
Regional dummies				
Oslo	Ref.		Ref.	
East excl Oslo	-0.1007	0.0351	0.1103	0.0466
Inland	0.0046	0.0433	0.0638	0.0587
South	-0.0383	0.0533	0.0845	0.0691
West	-0.2449	0.0345	0.1558	0.0476
Central	-0.1652	0.0388	0.3290	0.0525
North	0.2098	0.0415	0.2922	0.0535
Local unemp.	3.4096	0.6483	-1.9743	0.9485
Unobserved heterogeneity	8 support points in the discrete distribution (results not reported)			

B. Parameters that are allowed to differ for immigrants and natives

	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.
YSM								
3	-0.3016	0.3250						
4	-0.2506	0.2849	0.0171	0.6982				
5	Ref.		Ref.					
6	0.0504	0.2722	-0.6860	0.6861				
7	0.2981	0.2535	0.0799	0.5387				
8	0.3929	0.2501	-0.2033	0.6054				
9	0.3303	0.2499	-0.2770	0.5684				
10	0.6113	0.2471	-0.5377	0.5499				
11	0.8031	0.2438	-0.5450	0.5642				
12	1.1217	0.2383	-0.4233	0.5673				
13	1.2321	0.2426	-0.3484	0.5620				
14	1.3603	0.2418	-0.8304	0.5643				
15	1.2956	0.2484	-0.5634	0.5599				
16	1.3300	0.2535	-0.6770	0.5646				
17	1.2663	0.2557	-0.7263	0.5777				
18	1.3797	0.2623	-0.6011	0.5807				
19	1.5643	0.2683	-0.5220	0.5842				
20	1.2791	0.2738	-0.4207	0.5839				
21	1.3186	0.2772	-0.5999	0.5915				
22	1.3609	0.2813	-0.2227	0.5872				
23	1.3885	0.2767	-0.6581	0.5935				
24	1.2900	0.2759	-0.3309	0.5821				
25	1.1701	0.2830	-0.3699	0.5833				
26	1.2113	0.2873	-0.2643	0.5876				
27	1.3585	0.2948	-0.5047	0.5952				
28	1.2333	0.3079	-0.2402	0.6059				
29	0.9915	0.3303	-0.3040	0.6235				
Local unemp.	4.2967	1.8112	-5.8270	2.6805				
Immigrant dummy	-0.3048	0.2750	0.1555	0.6433				
Age								
20					3.0887	0.0862		
21	2.9821	0.6088			2.6062	0.0805	1.9244	0.2070
22	1.4379	0.7639	-0.8281	1.5471	1.4970	0.0831	1.5170	0.1720
23	0.4314	0.5873	-0.7852	1.3354	0.9022	0.0843	0.7501	0.1572
24	-0.2071	0.6766	2.0289	2.3219	0.6915	0.0807	0.0605	0.1463
25	0.7185	0.3570	-0.3242	1.2400	0.5214	0.0784	-0.1486	0.1376
26	0.4182	0.3560	-0.0525	0.8392	0.4017	0.0774	-0.0946	0.1297
27	0.1155	0.3440	-0.3871	0.8003	0.3260	0.0747	-0.0777	0.1263
28	0.1187	0.3003	-0.6589	0.6896	0.2026	0.0747	-0.0365	0.1200
29	-0.4306	0.3362	-0.5594	0.6141	0.0581	0.0752	0.0731	0.1177
30	Ref.		Ref.		Ref.		Ref.	
31	-0.1833	0.2664	-1.0066	0.5371	-0.1388	0.0761	-0.0299	0.1180
32	0.1829	0.2451	0.0905	0.4941	-0.0879	0.0727	-0.1769	0.1200

33	-0.0728	0.2423	-0.1909	0.4917	-0.1308	0.0746	0.0304	0.1186
34	-0.1291	0.2422	-0.3940	0.5098	-0.1086	0.0740	-0.0812	0.1203
35	0.0514	0.2354	-0.3018	0.5054	-0.1494	0.0742	-0.1587	0.1198
36	0.0310	0.2325	-0.3784	0.4902	-0.2190	0.0748	-0.1998	0.1212
37	-0.2008	0.2395	-0.2712	0.4834	-0.1693	0.0739	-0.1848	0.1174
38	-0.0824	0.2289	-0.3862	0.4889	-0.2175	0.0747	-0.3216	0.1202
39	-0.0435	0.2352	-0.3841	0.4920	-0.3917	0.0771	-0.2508	0.1172
40	-0.0887	0.2355	-0.4465	0.4840	-0.2657	0.0760	-0.2150	0.1179
41	-0.0946	0.2334	-0.5688	0.4958	-0.2486	0.0765	-0.3355	0.1207
42	-0.1450	0.2403	-0.4102	0.4857	-0.2606	0.0772	-0.2267	0.1206
43	-0.0219	0.2361	-0.7519	0.5034	-0.2360	0.0768	-0.2457	0.1223
44	0.1092	0.2391	-0.5840	0.4895	-0.2671	0.0787	-0.2056	0.1204
45	0.0637	0.2418	-0.8931	0.4913	-0.2430	0.0805	-0.3268	0.1222
46	0.0402	0.2451	-0.7148	0.4917	-0.2687	0.0808	-0.2388	0.1221
47	0.2032	0.2486	-1.0720	0.4970	-0.3260	0.0833	-0.2925	0.1247
48	0.1982	0.2554	-0.9149	0.4933	-0.2827	0.0838	-0.4282	0.1284
49	0.3136	0.2558	-0.9508	0.5010	-0.2519	0.0865	-0.4116	0.1295
50	0.3354	0.2621	-1.1372	0.5063	-0.2226	0.0875	-0.4281	0.1332
51	0.5292	0.2630	-1.0786	0.5060	-0.1619	0.0904	-0.5445	0.1348
52	0.4666	0.2699	-1.3244	0.5163	-0.2218	0.0948	-0.6077	0.1382
53	0.3586	0.2801	-1.7056	0.5323	-0.0713	0.0956	-0.8280	0.1447
54	0.7166	0.2824	-1.2535	0.5224	-0.0135	0.1003	-0.7338	0.1472
55	0.5921	0.3003	-1.4600	0.5284	0.0649	0.1037	-0.8746	0.1518
56	0.4145	0.3227	-1.6104	0.5489	0.0686	0.1101	-0.8352	0.1557
57	0.8699	0.3241	-1.7515	0.5610	0.0786	0.1167	-0.9614	0.1637
58	0.8246	0.3556	-2.3849	0.6215	0.4129	0.1166	-1.1760	0.1762
59	1.0486	0.3678	-2.0731	0.6212	0.6108	0.1234	-1.4564	0.1920
60	1.3557	0.3753	-2.5427	0.7073	0.7371	0.1298	-1.1586	0.1827
61	1.1863	0.4549	-2.4680	0.7599	1.2162	0.1297	-1.4695	0.2151
62	1.0719	0.5651	-1.5980	0.6997	1.2597	0.1516	-1.3786	0.2258
63	2.9373	0.5026	-2.0957	0.9410	2.5622	0.1386	-1.6894	0.2838
64	2.5545	0.7803	-2.4052	1.1696	2.5220	0.1813	-2.2460	0.3641
Educational attainment								
9	Ref.		Ref.		Ref.		Ref	
10-11	0.0446	0.0881	0.4670	0.1056	-0.2716	0.0281	0.3099	0.0369
12	-0.3572	0.1158	0.5648	0.1419	-0.7731	0.0406	0.4696	0.0609
13-15	-0.2323	0.1219	0.5320	0.1656	-0.4201	0.0455	0.3239	0.0653
16+	-0.1539	0.1026	0.6538	0.1287	-0.7748	0.0411	0.4704	0.0629
Missing	0.3550	0.0943	0.1354	0.1124	0.3522	0.1541	0.0165	0.1900
Duration dependence								
1 year	0.5873	0.0764	1.0936	0.0848	1.3323	0.0296	0.8685	0.0388
2 years	0.4426	0.0929	0.5989	0.0918	0.9443	0.0357	0.4227	0.0377
3 years	Ref.		Ref.		Ref.		Ref	