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Working Paper No. 63

**Foreign Nationality and Age - A Double Drawback for
Reemployment in Germany?**

by

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Foreign Nationality and Age - A Double Drawback for Reemployment in Germany?

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We analyze reemployment prospects for Germans and non-Germans over the life course. Older foreigners may experience a double drawback due to health issues, discrimination or differences in occupational structure. This effect might be alleviated by accumulation of country-specific skills over time and selectivity effects. We apply a piecewise-constant hazard rate model on more than 270.000 unemployment episodes drawn from the social insurance register for male employees aged 25 to 65 years between 1975 to 2001. Foreign nationality lowers reemployment prospects by 7 percentage points. On average, the effect of aging on reemployment is stronger for non-Germans. The effect of nationality differs strongly between nationalities and ranges from minus 17 percentage points for Greeks up to plus 5 percentage points for people from Ex-Yugoslavia. Aging is particularly a problem for foreigners from Greece and Turkey: Until age 60, their prospects for reemployment are, on average, about 27 percent below that of natives.

Keywords: labor migration, aging workforce, reemployment, proportional hazard rate models, demographic change

JEL Classification: J14, J15, J24

A. Introduction

Attracting young and well educated foreigners is considered to be one solution to slow down the graying of the labor force and the impending scarcity of skilled labor, caused by low fertility rates [Blanchet 1989, UN 2000]. The German Government had already chosen to revert to foreign labor in the time period 1955 to 1973: *Gastarbeiter* (guest workers) from southern countries such as Italy, Spain, Greece, Turkey or Yugoslavia were recruited to meet the excess demand for unskilled labor.

The typical guest worker was aged 15 to 25 years at the time of entry to Germany [Fertig and Schmidt 2001]. But most of the foreign workers did not come temporarily, during their prime age time only, they stayed beyond the time of the extensive demand-driven immigration policy in Germany, which ended after the first oil shock in 1973. A migrant arriving for example in 1965 at the age of 25 was in his early thirties when immigration policy changed and is in his retirement age by now.

Before we follow up the path of non-German workers during their working life, we give a short overview about the foreign population and their employment situation. In 1970 about 3 million people of foreign nationality were living in Germany. Until 2004, their number increased to 7.3 million [FSO 2006], or a share of 8.8% of total population. The number of employed foreigners, to the contrary, stayed quite constant at 2 millions from 1970 onwards. In 2004 their number

accounted to 1,796,500 persons. Table I provides absolute numbers and the respective shares of the total number of foreign employees for the five largest ethnic groups on the labor market.

country of origin	number of employees	% of all foreign employees
Greece	96,161	5.4
Italy	175,136	9.8
Ex-Yugoslavia	153,763	8.6
Turkey	479,884	26.9
Poland	62,363	3.5

Table I Employment of selected nationalities in 2004

Source: *BMFSFJ [2005b] p. 584; edited by the authors*

The employment situation of foreigners in Germany worsened over the years. The unemployment rate for foreigners grew from 10 % to 22.8 % between 1990 and 2004 (that corresponds to 549,944 unemployed persons in 2004 [Federal Employment Office 2005]).

Moreover, unemployment rates differ strongly across nationalities (see Table II). The differences can be partly attributed to socioeconomic determinants like education and occupational structure [Bender and Karr 1993]. Overall differences in unemployment rates indicate that belonging to a certain nationality might play a role for reemployment prospects.

Foreign nationality paired with age seems to be a double handicap on the labor market: 198.000 foreigners (18,5 %) aged 45 to 65 were unemployed in

country of origin	unemployment rate (in %)		
	1980	1990	2004
Ex-Yugoslavia	2.8	6.0	18.3
Greece	4.1	9.7	18.0
Italy	5.5	10.6	19.8
Spain	3.2	6.8	13.8
Turkey	6.3	10.0	25.8

Table II Unemployment rate for selected nationalities

Sources: Federal Employment Office [2005] p. 81, Bender and Karr [1993] p. 196

2002[Bauer et al. 2004]. This exceeds the all-over unemployment rate for foreigners below the age of 45 (15.1%) as well as the unemployment rate of older Germans (ages 45 to 65: 11.3%) by far. The average unemployment duration of 16 months was 2 months longer than for elderly Germans [Bauer et al. 2004], while the share of long-term unemployed was about the same (53%). A Norwegian study of Rogstad and Raaum [1997] – to our knowledge the only one explicitly dealing with aging migrants – finds that age together with ethnic background and long-term unemployment are the most important barriers on labor markets.

nationality	German	non-German
unemployment rate	11.3%	18.5%
average duration (in 2000)	14 months	16 months
unemployed >1 year	53.0%	53.6%

Table III Characteristics of unemployment for ages 45-65 in 2002/2003

Sources: BMFSFJ [2005a], Bauer et al. [2004]

One explanation for the bad labor market chances of older non-Germans is that foreign and older people frequently worked or work in sectors that were strongly affected by structural change. Foreign workers are for example over-represented in the manufacturing and construction sectors. In 1974, almost 80% of foreign employees worked in manufacturing, while for all workers this share amounted to 56%. Until 2000, the share of foreigners in the manufacturing sector decreased to 53% (total: 40%)¹ [BMFSFJ 2005a].

In the 1970s, both sectors underwent structural changes due to increasing automation and to outsourcing of labor-intensive parts of the production to low-wage countries. This reduced working opportunities for foreigners [Seifert 2001].

¹More detailed information about the sectoral distribution of foreign workers during the time period 1970-2000 is provided by Hönemann [1987] and Seifert [2001].

Employment opportunities in Germany heavily depend on formal education. However, education received abroad is often not accepted as being equivalent and this narrows employment opportunities for foreigners (see Bender et al. [2000], p.81). In 2004, about 72% of all foreign unemployed had no vocational degree, which was more than twice as high as the respective share for Germans (29,5%)(see BMFSFJ [2005a] p. 414).

Given the difficult employment situation of foreigners and for older persons in general, and the surprisingly huge number of affected persons, it is important to know more about the job career of those migrants who grew old in Germany. Especially the stability of employment histories and the reintegration process after job loss are issues to be considered by labor market policy. Our paper aims to fill the existing gap in labor market and migration research and concentrates on the last point: the reemployment prospects after job loss of foreign persons compared to Germans. Here we are mainly interested in how reemployment chances change over the life course. Our three research questions are:

1. To what extent do reemployment prospects of Germans and non-Germans differ?
2. What is the effect of aging on reemployment prospects and how does it differ between Germans and non-Germans?
3. How does the reemployment pattern vary over the life course for different nationalities?

To answer these questions, we first establish a theoretical framework for deriving the factors that drive reemployment with special focus on the effect of age and nationality (section B). On this basis, we analyze the employment histories of male workers in Germany from 1975 to 2001 using register data of the German Federal Employment Office. We estimate piecewise-hazard rate models for each research question, controlling for labor market indicators, demographic variables, and aspects of the individual employment history. The statistical model, variables, and data used are described in more detail in section C, the results in section D. Comparison of reemployment rates of Germans and non-Germans (subsection D.1) shows that the reemployment rate for foreigners was about seven percentage points lower than for Germans. Estimating separate models for Germans and non-Germans in section D.2, we find that reemployment chances decrease over the life course no matter what the nationality is. Though, reemployment prospects worsen to a larger extent for older foreigners between ages 45 and 55. A more detailed analysis based on separate nationality groups shows that growing old is especially a drawback on the labor market for foreigners of Turkish and Greek nationality. Foreigners from Italy, the

former Republic of Yugoslavia, Africa and Asia display more similar reemployment patterns to Germans of the same age (D.3).

Section E concludes and draws attention to the necessity of further research on labor market dynamics for the elderly foreign population in Germany.

B. Age, nationality and reemployment

Productivity and the capacity for innovation are generally judged to be lower for elderly, especially because general physical fitness, health and at least some cognitive capabilities such as speed of reasoning tend to decline over the life course [Bogai et al. 1994, Börsch-Supan et al. 2005, Skirbekk 2003]. Though, as in most occupations maximum capacity is not necessary to accomplish work tasks and as there is hardly any gerontological evidence that the *work* performance of the elderly declines (e.g. Avolio et al. [1990]), the weak employment situation may as well reflect a certain extent of age discrimination on employer side [Büsch et al. 2004]. In countries with seniority-based salary systems, the average wage of elderly sometimes exceeds their average productivity and makes "old" labor expensive [Ebbinghaus 2006]. However, it should be noted that seniority based salary systems yield below productivity earnings at younger ages, such that salaries and productivity coincide on average over the working life. Nevertheless, when it comes to reemployment, potential employers do not profit from such implicit contracts.

One reason for weak performance on labor markets is seen in the obsolescence of human capital: Even if levels of educational attainment do not differ strongly between old and young, formal education of older workers dates back decades. Those with a long tenure at their last employer have accumulated a lot of firm-specific human capital, which might not be valued to the same extent at another employer [Fallick 1991, Kletzer 1998]. Additionally, the amount of vocational training received decreases with age [Ebbinghaus 2006, Tros 2006].

The probability to *get* a job offer is influenced by the factors described above. But reemployment also depends on the probability to *accept* this job offer [Petrongolo 2001]². The latter is strongly influenced by a person's reservation wage. According to the "option value approach" of Stock and Wise [1990], individuals maximize their expected lifetime utility

²In basic job-search models, the reemployment rate is defined as job offer arrival rate times the probability to accept a job. For a more detailed linkage of the empirical approach followed in this paper and theoretical job-search models see Frosch [2006].

when deciding between work, unemployment and retirement. Previous salaries, the level of unemployment benefits and the volume of already accumulated (private and public) pension entitlements influence the probability to search for a job and, eventually, to accept a job. Empirical evidence shows that higher-wage earners will more probably sustain their desired standard of living even if they retire early (see e.g. Feldman [1994]). Thus, reemployment rates of higher-wage earners will be rather low, even if, from a labor-demand perspective, they could get job offers.

Broadly, reemployment patterns of older non-Germans are determined by the same effects. However, the affliction with health problems is even higher among non-Germans. BMFSFJ [2005a] emphasize that health problems of older workers can be mainly attributed to the type of occupation. Particularly, jobs with heavy physical strains and jobs in manufacturing are supposed to cause illnesses of older workers. This is also true for jobs in the service sector that are often combined with high psychological stress. Keeping in mind that foreigners are over-represented in such occupations, they might suffer more frequently from job-related diseases. This conjecture is strengthened by the fact that in the age group 56 to 60 the frequency of visits to a physician has been higher for non-Germans [Bauer et al. 2004]. Moreover, in 2002 the share of employees being ill for more than six weeks is almost twice as high for foreigners than for natives (13.7% versus 6.9%) [Özcan and Seifert 2005]. Karr and Apfelthaler [1981] suggest in their descriptive analysis of unemployment duration among German job searchers that the negative effect of age is especially strong if it appears coupled with health problems. Therefore non-Germans might be stricken to a certain extent by this double effect.

Another barrier for re-entry on the labor market, which is independent of age, could be discrimination. We follow Goldberg et al. [1995] who define direct discrimination as occurring when a foreign person is disadvantaged because he or she is (assumed to be) of foreign nationality or origin. They compared job search outcomes of native and Turkish males applying for the same job offer³. Even second-generation migrants were still disadvantaged in about 19% of all job applications⁴. Constant and Massey [2005] find evidence for the segmented labor market theory suggested by Piore [1979]. They show that there is dis-

³The characteristics of both applicants were comparable and their origin not distinguishable from their language abilities. Origin was only apparent by their name.

⁴Discrimination occurred in case the Turkish applicant was turned down, while a succeeding call of the German applicant was successful. Furthermore, Goldberg et al. [1995] apply several validity tests and identify differences in treatment of both applicants.

crimination on the German labor market for foreigners from former guest worker countries with regard to their relative position in the labor market⁵. Migrants are bound to jobs with low prestige and little possibilities for social upward movement over time.

With regard to the reemployment probability and unemployment duration of older foreigners, we also have to take into account that they are close to retirement age. Corresponding to the "option value approach" described above, one of the biggest motivations to accept bridge employment for some years before retirement is the lack of financial resources [Harris 1981]. This is often the case for foreigners. Working mainly in low-wage sectors, they accumulate less public and private pension entitlements. Hence the available income for 50-year old foreigners from former recruitment countries is about 20% lower than for Germans. For people of this age group originating from Turkey, the income gap amounts to 42% [Bauer et al. 2004]. Consequently, between 1992 and 2004 the fraction of immigrant households that reported no savings is considerably higher in comparison to German households (58% versus 40%) [Bauer and Sinning 2005]. Also, the average saving rate for savings is about 6 or 7 percentage points lower for households with a migration background than for natives.

Therefore, the necessity to extend work life even if it is difficult to reintegrate after job loss can be assumed to be higher, on average, for foreign unemployed. Comparing labor-force participation rates Bauer et al. [2004] show that in age group 60-65, they are 4.1 percentage points higher for non-Germans than for Germans, which could be an indicator for later retirement among foreigners.

Chiswick [1978] and Carliner [1982] provide some supplementary considerations concerning the evolution of labor market performance of immigrants in the US over their life course: They analyze the process of skill accumulation of immigrants and find that they earn 17% less than nationals when arriving in the host country. They explain this finding by the fact that immigrants lack skills specific of the receiving country's labor market (e.g. language proficiency). The human capital stock of nationals and immigrants converges when immigrants start adapting to the receiving labor market. Constant and Massey [2005] picture this effect for foreigners on the German labor market. In the long run, the initial wage gap in weekly wages at the point of entry between foreigners and natives is counterbalanced by the wage premium to additional years of work experience, which is four times as high for foreigners than for natives. Thus, after 23 years

foreigners might reach income-parity with natives⁶.

We will refer to this process as *skill accumulation*. According to these assumptions and findings, the human capital obsolescence effect older employees suffer from could be partly compensated by the assimilation of country-specific human capital.

Selectivity might also play a role for the (re)employment prospects of migrants on the labor market: as only the most able and ambitious persons start a new life in a foreign country, immigrants are "more able and more highly motivated" and they "choose to work longer and harder" than nationals (Chiswick [1978], p. 900 and p. 89). Even a double selectivity might exist if we assume that in the long run, only the most skilled see chances on the host country's labor market and the others prefer to exit the labor market and to go back to their countries of origin.

These considerations can easily be connected with a life course perspective: If *skill assimilation* takes place, the productivity of immigrants should grow the longer they are in the country and thus, the older they are. The impact of age on labor market performance should then be less pronounced for persons with a migration background than for nationals. This effect could be reinforced if, additionally, positive *selectivity* works. Older migrants could be even more successful in dealing with aging and have less negative consequences for their employment situation than non-migrants. Though, if health problems, compositional effects with regard to the occupational structure or discrimination aspects are more pronounced for non-Germans than for nationals, the effect of aging could just as well be stronger.

C. Empirical model

Piecewise-constant hazard rate model. Hazard rate models are commonly used to study unemployment duration and the reemployment process [Fitzenberger and Wilke 2004, Gilberg et al. 1999, Petrongolo 2001]. Their advantage is that they allow consideration of the impact of exogenous variables affecting reemployment even if these variables are time-varying, like the current age of an individual. Moreover, right-censoring is statistically accounted for in these models [Blossfeld et al. 1986]. In our case, right-censoring occurs in case unemployment histories are not complete. An appropriate model for the analysis of reemployment

⁵In their analysis Constant and Massey [2005] control for a variety of human capital related variables and basic socio-economic characteristics.

⁶Supporting these results, Lang [2004] estimates an initial wage gap of foreigners of about 10% on arrival in Germany. The estimated yearly wage increase is about 0.3% which means that it takes foreigners about 28 years to reach income parity with natives.

after job loss is the following exponential hazard rate model.

$$\lambda(t, \mathbf{x}) = \lambda_0(t)e^{\beta\mathbf{x}} \quad (1)$$

The term $\lambda(t, \mathbf{x})$ denotes the hazard rate, which depends on nonemployment duration t and a set \mathbf{x} of exogenous variables that may vary across time. The hazard rate, also called the conditional failure rate indicates the instantaneous potential of a person to experience reemployment, given this person is still nonemployed until time t . Thus the hazard rate, measuring reemployment cases per time unit (person-months), can be interpreted as the "speed of reemployment". Person-months refer to the number of non-employment months for all persons being unemployed at time t .

$\lambda_0(t)$ is the baseline hazard rate that depends only on nonemployment duration t and expresses the instantaneous potential of reemployment for a reference group with certain characteristics. If the baseline hazard is assumed to take a constant value, the classical exponential hazard model is on hand. In line with other research on reemployment durations (see [Blossfeld and Rohwer 1995, Fallick 1991]), we estimated a piecewise-constant exponential hazard rate model. Here, the baseline hazard is assumed to be constant for certain time intervals but variable between them⁷. For example, in our case, the baseline risk is allowed to for persons in the first three month of non-employment compared to the baseline risk for persons having a non-employment duration between 3 and 6 months.

A set of covariates \mathbf{x} , as described below, shows up in the term $e^{\beta\mathbf{x}}$. The vector β represents a set of coefficients that indicate the effect of independent variables \mathbf{x} in shifting the time-varying baseline hazard function $\lambda_0(t)$ upwards or downwards and thus increase or decrease reemployment prospects [Teachman 1982].

Reemployment is an event in the labor-market history of an individual that can take place more than once. In the basic file about 47% of all spells under study refer to multiple nonemployment episodes. We therefore extend the above model to allow for multiple episodes of reemployment. Multiple-episode models take into account that the assumption of independent observation is violated [Gilberg et al. 1999].

For a comprehensive overview of statistical modeling of multiple-episode models, parameter estimation and related methodological issues see Vermunt and Moors [2005].

Dataset. We use register data for West-Germany from

the IAB⁸. Employment histories are provided on a day-to-day basis. Depending on the dataset, 1 or 2% of all employees registered by the social insurance system from 1975 until 2001 are covered⁹. Several millions of (un)employment spells produced by more than 275,000 individuals employed in West-Germany allow for highly differentiated analyses.

In order not to complicate the analysis with gender-specific aspects, we only include male employees. To avoid biases due to structural differences between East and West, we concentrate on West-Germany. Job-hopping at the start of a professional career might also cause problems, thus we include only ages 25 to 65 years. Moreover, we only consider unemployment episodes with a minimum duration of at least one month in order to avoid an estimation bias due to frictional unemployment.

Information about the place of birth or the time of entry to Germany is not provided. The criterion for identifying foreign workers is therefore citizenship, only. For a basic analysis of the nationality effect and the age-nationality pattern (see Sections D.1 and D.2), we use the regional file covering data up to the year 2001. However, in this data set the nationality variable only distinguishes between German vs. non-German nationality. To analyze the reemployment pattern by nationality, we then apply the same model on the basic employment file (see D.3). Data is then only available up to the year 1995, but 16 ethnic groups can be identified. Table IV gives an overview about the characteristics and differences of the two data sets.

Variables. The baseline hazard rate λ_0 refers to the time elapsed since job loss and is specified in 6 categories: 2 to 3 months, 4 to 6 months, 7 to 9 months, 10 to 12 months, 13 to 18 months, and 18 to 24 months. But simply defining unemployment duration as difference between start and end of the period in which unemployment benefits are granted can result in severe biases. Idle periods, exhaustion or delayed registering can lead to non-entitlement and therefore a stop in benefit receiving. We therefore follow the definition suggested by Fitzenberger and Wilke [2004](p. 7/8) and define nonemployment as the time elapsed since job loss and until reemployment or drop out. Thus we do not depend on the information whether a person receives unemployment compensation or not during this time.

⁸Institut für Arbeitsmarkt- und Berufsforschung (Research Unit of the German Federal Employment Office).

⁹For East-Germany, data is only available from 1992 on. Employment histories are therefore incomplete for the generation 50+. Furthermore, interpretation of results demands to include structural changes during the transformation process after reunification [Brasche and Wieland 2000]. We therefore concentrate our analysis on West-Germany.

⁷For further information about time-varying baseline hazards see also [Vermunt and Moors 2005].

Data Set:	Basic File	Regional File
<i>Total Sample</i>		
Observation period	1975-1995	1975-2001
Sample size	1 %	2 %
No. of persons	559,540	1,293,819
No. of spells	7.8 million	21,0 million
<i>Estimation Sample</i>		
No. of persons ^a	72,463	172,781
No. of unemployment episodes, thereof	136,456	385,432
- multiple episodes(%)	47 %	55 %
- leading to reemployment within 2 years	97,770 (72 %)	275,502 (71 %)
<i>Differences in Variables</i>		
Nationality	16 ethnic groups	German yes/no
Region	East, West	343 districts
Industrial sector	95 sectors	16 sectors

^acharacteristics: male, above 25, West-Germany, nonemployment duration > 1 month

Table IV Comparison of the two datasets

Though, the reader has to keep in mind that nonemployment does not necessarily mean unemployment but can also indicate that a person directly moves from unemployment to (early) retirement or drops out due to other reasons. In the case of migrants, return migration is also accounted for as nonemployment. To alleviate possible biases, we right-censor nonemployment durations after 24 months¹⁰. Thus our statements refer only to month 2 to 24 of the unemployment episodes. Generally we right censor all unemployment observation at age 65 to account for retirement.

The vector of covariates includes time-constant and time-varying variables from three domains:

1. *Labor market and policy indicators*: The current period is included as a time-varying covariate to control for developments on the labor market over time. The season at start of nonemployment is also included to capture special patterns for occupations with high job mobility due to seasonal work.
2. *Demographic variables*: Current age, nationality, and educational attainment are used as further explanatory variables. Except current age which varies over time, all covariates are measured at the time of job loss and are assumed to remain constant over time. This assumption seems realistic for our sample because after age 25, changes in nationality are not that frequent

¹⁰This is realistic because (a) unemployment benefits are still paid and (b) most reemployment cases take place within the first 24 months [Frosch 2006]

in our sample¹¹ and therefore negligible.

3. *Employment history*: To account for the employment history before job loss, the cumulated duration of nonemployment before the current nonemployment spell, the salary group in the last job, and the industrial sector of the last employer are included.

D. Results and Discussion

D.1. The effect of nationality

The first model using data from 1975 to 2001 compares reemployment prospects for non-Germans and Germans. The survival curves of both groups displayed in Figure 1 give a first impression.

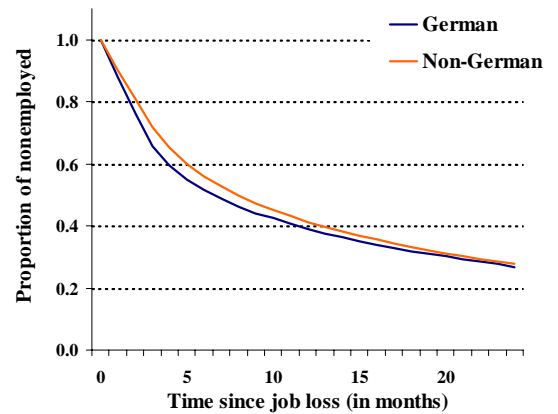


Figure 1: Kaplan-Meier survival curves by nationality.

Out of those who were classified nonemployed for at least one month, about 50 % managed to return to employment within the first ten months. After two years, 25 % were still unemployed. Surprisingly, the survival curves do not differ significantly in shape and level for Germans and foreigners, but we did not yet adjust the estimates for any control variables.

To shed more light on the influence of nationality on reemployment, we now apply the piecewise-constant hazard rate model for multiple unemployment episodes per person, described in section C, on data of the regional file and control for age, previous salary level, calendar period, cumulated duration of previous unemployment periods and industrial sector.

¹¹Actually, in the estimation sample of the nationality-specific analysis (see Section D.3), there is no nationality change at all for the individuals included

We first estimate a joint model for all nationalities (see Model 1 in Table A). The absolute baseline hazard for the reference group¹² decreases with unemployment duration. In month 2 and 3 after job loss, 81 unemployment cases occur per 1000 person-months spent in nonemployment. Six months later, the rate is only about half the initial level. If we compare results of separately estimated models for Germans and foreigners, we identify similar patterns of the absolute baseline hazard for both groups.

The relative reemployment risk for foreigners compared to Germans is only 0.93. This finding complements previous empirical evidence, that nationals have better reemployment chances [Fahrmeir et al. 2003] and a higher reemployment speed (e.g. Lüdemann et al. [2004], Wilke [2004]) than foreigners.

Results for the control variables go in line with previous empirical findings and the theoretical considerations presented in section B: As expected, we find a strong negative relationship between current age and reemployment. For those with a vocational education, it is slightly easier to get back to employment than for those without any vocational degree. Though, this positive relationship between reemployment and education does not prove true in respect to academic education. As suggested by reservation wage theory, last salary level and reemployment prospects are, on average, positively related. Most probably due to an increasing variety of early retirement possibilities and a reduction of entitlement age, reemployment chances decrease between 1975 and 2001. Seasonal effects show that it is easier to get reemployed when job loss happens in the winter months than in summer months (see also Lüdemann et al. [2004]). Frosch [2006] gives a more detailed interpretation of these basic results, though without further exploring the joint effect of nationality as we do in this paper.

D.2. The age-nationality effect

We now quantify how much reemployment prospects differ between Germans and non-Germans. Our focus is then the evolution of the effect of foreign nationality *over the life course*. Therefore, we now estimate the model separately for younger and older employees (see Model 2 and 3 in Table A). The upper part of Table V gives a rough picture of the situation, displaying the relative reemployment risk

of foreigners compared to Germans for different age groups.

The gap in reemployment risks between German and foreign persons amounts to 8 percentage points for those in the prime age group (25 to 54 years). It increases to 12 percentage points for age group 55 to 65.

Relative reemployment risks (German=1)	
Age group	
25 to 54	0.92***
55 to 65	0.88***

Age group	Relative reemployment risks by age		
	German	Non-German	Difference?
25 to 39	1	1	no
40 to 44	0.92***	0.90***	yes (*)
45 to 49	0.86***	0.78***	yes (***)
50 to 54	0.71***	0.59***	yes (***)
55 to 59	0.24***	0.23***	no
60 to 65	0.08***	0.10***	yes (*)
different pattern?			yes (***)
sample size ^a	333.968	57.623	
Significance levels :	* : 10%	** : 5%	*** : 1%

^aNumber of unemployment cases; multiple unemployment episodes per person are possible.

Table V Relative risks by nationality and age

To refine the age-nationality pattern, we compare reemployment risks of Germans and non-Germans across age groups. For this purpose, we estimate the hazard model described above jointly for all age groups, but separately for Germans and foreigners (see Models 4 and 5 in Table A). Figure 2 and Table V show the development of the relative risks over the life course for the two groups¹³. In both cases the reference group for the relative risk is the lowest age group from 25 to 39 years.

Differences in the two curves can be interpreted as differences in the strength of the age effect on reemployment. We conduct Wald-tests for each pair of parameters to see if the development of the effect of aging over the life course differs significantly for Germans and foreigners. The comparative disadvantage in reemployment prospects between the youngest and the oldest age group is almost independent from nationality and amounts to about 90 percentage points. Though, the relative risk curve for non-Germans lies below the curve for Germans. We see that especially between ages 45 and 55, age is a bigger drawback for

¹²Throughout this paper, the reference category is always an nonemployment episode of a German (male in West-Germany) aged 25 to 40 years without any professional education, who lost his job within the first three months of a year, previously worked in the manufacturing sector and earned below 1000 Euro. The unemployment episode is the first job loss for this person and happened between 1975 and 1980.

¹³As in the previous hazard-rate model, we again control for salary level, calendar period, cumulated duration of previous unemployment periods and industrial sector. As the sample only refers to male unemployed living in West-Germany, gender and regional issues are indirectly accounted for to a certain extend.

non-Germans than for Germans (compared to the initial value of each group for ages 25–39). This result is significant on the 1%-level. As an overall result,

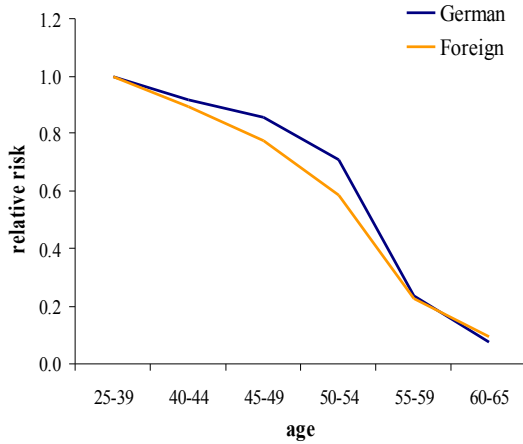


Figure 2: Relative impact of age on reemployment prospects for Germans and non-Germans.

both positive effects that could alleviate the impact of aging on reemployment for foreigners, the accumulation of country-specific skills by immigrants over the life course and positive selectivity, seem to be over-compensated by other factors. Bad health conditions or (double) discrimination might play a decisive role in explaining the differences found. Another, completely different explanation might be that we did not completely capture the effect of sectoral composition. Even controlling for the industrial sector of the last employer before job loss, we might have missed the long-term consequences for those who previously worked in manual occupations and then had to re-orientate because of the bad employment situation due to structural change.

The gap in the strength of the age effect closes starting with age 55. In the oldest age group, from 60 to 65 years, the relative reemployment risk compared to the youngest age group is even slightly higher for foreigners, though the result is only significant at 10%-level. This could be attributed to an increasing influence of financial considerations: having accumulated on average less public and private pension entitlements, foreigners could depend more on their earnings and therefore work longer than Germans.

D.3. Nationality-based differences

In this part, we first quantify the discrepancy in reemployment opportunities between Germans and

several nationality groups¹⁴. In a second step, we determine the extent to which the effect of aging on reemployment prospects differs across nationalities. Basically, we apply the models described in sections D.1 and D.2 to the basic file of the employment subsample. This dataset encompasses data from 1970 to 1995, only, but contains more specific information about nationality than the regional file. The basic file provides information about the eight main source countries for labor migration, namely Greece, Italy, the former Republic of Yugoslavia, Portugal, Spain, Turkey, France, and Austria, and about seven aggregated groups of countries (Benelux, other EG-countries, other industrialized nations, Eastern Europe, Africa, Asia, other countries).

Estimating the model¹⁵ as described in Section D.1 supplemented by detailed information about nationality we find that reemployment prospects vary considerably between nationalities. Differences range from minus 17 percentage points for Greeks to plus 7 percentage points for foreigners from other industrial countries. However, controlling for labor market indicators, demographic variables, and individual employment histories, the coefficient of the dummy variable for nationality was not significant for 9 out of 15 nationalities¹⁶. This indicates that differences in reemployment can be mainly attributed to socioeconomic determinants that we included in our analysis.

For nationalities shown in Table VI, the impact of nationality on the risk of reemployment was significant. As in Section D.1, German nationality is the reference category for the relative risks.

nationality	rel. risk	95 %-CI		persons
Germany	1			61,331
Greece	0.83 **	0.75	0.91	648
Italy	0.87**	0.83	0.92	1,509
Ex-Yugoslavia	1.05**	1.01	1.09	1,756
Turkey	0.87**	0.85	0.90	3,507
Africa	0.89*	0.82	0.97	479
Asia	0.85**	0.79	0.91	798

Significance levels : * : 10% ** : 5% *** : 1%

Table VI Relative reemployment risks by nationality

We find that reemployment prospects of Greeks are worst, lying about 17 percentage points below that of

¹⁴Belonging to a nationality (group) corresponds to being citizens of the respective country or a country that is included in the aggregated group of countries, e.g. Africa. Thus the criteria we refer to is citizenship only. Following the term nationality may also be used for a group of aggregated countries.

¹⁵Results by nationality can be provided on request via e-mail by the authors.

¹⁶This is the case for Portugal, Spain, France, Benelux, other EG-countries, other industry nations, Eastern Europe, and other countries.

Germans. There are high differences in reemployment prospects for people from Turkey and for Italy (each minus 13 percentage points difference). Reemployment prospects of foreigners from other former recruitment countries like Spain and Portugal were, respectively, 8 percentage points and 7 percentage points lower than for Germans, but the coefficients were not significant. However, people from the former Republic of Yugoslavia have significantly better reemployment prospects than Germans (about 8 percentage points). Significant differences further exist for foreigners from Asia (minus 15 percentage points) and Africa (minus 11 percentage points).

The result that reemployment prospects are higher for people from the former Republic of Yugoslavia compared to other foreigners is in line with the observation that, since the mid-eighties, foreigners from (Ex-)Yugoslavia have been facing the lowest unemployment rate of all non-EU nationalities (see also Table B and Hönekopp [1987]). Furthermore, Bender and Karr [1993] emphasize that workers from the former Republic of Yugoslavia have an occupational structure that is more similar compared to Germans than foreigners of Turkish, Italian and Greek nationality.

Analyzing the sectoral distribution of foreign workers in our sample (see Appendix B) we find that, from 1975 to 1995, the share of employees in the manufacturing sector was always lowest for people from the former Republic of Yugoslavia (e.g. 1985: 47.1%) compared to Greeks (1985: 74.1%) and Turks (1985: 65.4%). Although these differences decreased over the years they still persist. However, the share of people from Ex-Yugoslavia is highest in the construction sector (33.5%). In our sample the share of workers in the service sector increased over time for all nationalities. In 1994 the respective shares were 11.9% for Turks, 14.8% for people from Ex-Yugoslavia, and 19.4% for Greeks. In contrast to this, more than a third of all workers from Asia and Africa worked in the service sector. Compared to natives, foreigners from Asia and Africa are also over-represented in the wholesale and retail trade sector (1994: 19.9% and 21.6% respectively). According to Bender and Karr [1993], people working in the service sector and originating from Ex-Yugoslavia were mainly employed in the public service sector, e.g. in hospitals, whereas Italians can be mainly found in the private services sector. This occupational structure could also have had an effect on reemployment that might not be caught by the control variable for economic sectors that we included in our analysis.

Interpreting these results, one should also keep in mind that we cannot control for determinants like language abilities, differences in norms and values, all-over duration of stay etc. that might play a role and at the same time vary across nationalities.

Based on a much smaller dataset¹⁷, Uhlendorff and Zimmermann [2006] also analyze the transition from unemployment to employment of workers from the former recruitment countries. In line with our results they find that reemployment is particularly difficult for workers from Turkey and Greece. However, they do not find significant differences in the hazard rate for immigrants coming from Italy, Ex-Yugoslavia, and Spain compared to natives.

Altogether, the first part of the nationality-specific analysis shows that the "risk" of reemployment differs significantly between nationalities. Furthermore, reemployment prospects are significantly worse for some ethnic groups of foreign workers, with the exception of foreigners from the former Republic Yugoslavia. Similarities in the occupational structure may be the reason for advantages towards other ethnic groups. However, this does not explain why reemployment prospects for people from Ex-Yugoslavia are better than for natives.

In the second part of this section, we take a closer look on foreigners from those nations for which nationality had a significant impact on reemployment (see Table VI). Assuming that aging adds to existing disadvantages, the question is whether the extent to which aging affects reemployment equals the pattern for natives. In what follows, we estimate our model for each nationality separately.

The results show that the negative impact of age on reemployment exists for all nationalities but is considerably stronger for workers from Greece, Italy, Turkey and Africa. For people of the former Republic of Yugoslavia and Asian people reemployment chances also decrease with age, but the effect of age is less pronounced than for Germans.

Age	Germany	Asia	Greece	Turkey	Yugoslavia
25-39	1	1	1	1	1
40-44	0.90***	0.71**	0.90	0.77***	1.00
45-49	0.86***	0.75*	0.62***	0.56***	0.88**
50-54	0.74***	0.76**	0.46***	0.41***	0.78***
55-59	0.27***	0.37**	0.18***	0.23***	0.39***
60-65	0.13***	-	0.02***	0.14***	0.16***
different pattern?	yes(***)	yes(**)	yes(***)	yes(**)	yes(**)
Sign. levels :	* : 10% ** : 5% *** : 1%				

Table VII Age-Effect on Reemployment: Relative Risks for specific nationalities

Table VII provides an overview about age-nationality patterns for different nationalities. Infor-

¹⁷Uhlendorff and Zimmermann [2006] use data of the German Socioeconomic Panel. Their accordant sample of foreigners consists of 4,397 spells (spells of foreigners in our sample: 19,820). As in our study they do not control for language abilities, but they include information about the duration of stay.

mation is given about how being of a certain age affects the reemployment hazard compared to members of the youngest age group of the respective nationality. It becomes evident that age lowers reemployment chances no matter, what nationality a person has. But the "pattern of aging", namely the extent to which aging affects reemployment differs strongly between nationalities. Comparing to members of the youngest age group 25-39 with people at ages 55-59, we find that reemployment prospects decrease between 61 (people from Ex-Yugoslavia) and 82 percentage points.

Furthermore, we use a Wald-test to find out whether the general age-pattern, considering all coefficients together, differs significantly from that of Germans. For foreigners from Africa, the effect of aging on reemployment is similar in comparison to natives. A different impact of age on reemployment than for Germans is detectable for foreigners from Asia, Greece, Turkey, and Ex-Yugoslavia.

The effect of age on reemployment prospects for people from the former Republic of Yugoslavia is not as strong as for natives. This nationality-specific aging pattern might be one reason for the better reemployment chances in general (see Table VI) in comparison to natives.

Reemployment prospects for Asian foreigners aged 55 to 59 are significantly better than for Germans. However, this has to be treated with caution because especially in the older age groups the sample sizes get very small. In this respect, the nationality-specific analysis would benefit from using the weakly anonymized regional data set that provides information about 2% of the labor force¹⁸.

In the case of Greeks and Turks, age hampers reemployment in addition to existing general disadvantages due to nationality. Figure 3 pictures the age effect by the relative risk of reemployment for Greeks and Turks in comparison to Germans.

Differences in the age pattern between Germans and Greeks start between 45 and 49. Further on, the negative effect of age on reemployment is stronger than for Germans and persists for all age groups. In contrast to this, the decline in reemployment prospects already starts at ages 40-44 for Turks and declines more sharply. But like in the case of Germans and foreigners in general (see section D.2) the age effect on reemployment prospects is equal for both groups in the oldest age group 60-65). On average, reemployment prospect for Greeks and Turks lie about 25% and 29% respectively below that of Germans.

Altogether, the second part of this section shows, that the strength of the age effect varies strongly bet-

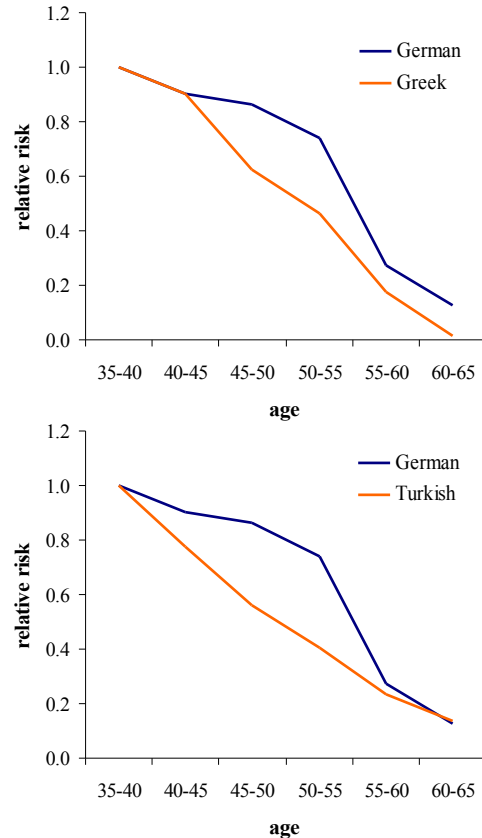


Figure 3: Relative impact of age on reemployment: pattern for Greek, Turkish and German employees in Germany

ween nationalities. For people from the former Republic of Yugoslavia and Asians, aging affects reemployment less compared to Germans' pattern of aging. For foreigners of Greek and Turkish nationality it becomes evident that age is an additional drawback for reemployment.

E. Concluding remarks

During the coming decades, the number of foreign workers on the German labor market is expected to increase. On the one hand, our aging society needs to attract well-educated foreign workers. On the other hand, most of the 1.025 million children of the resident foreign population will join the German labor market in the next decade [BMFSFJ 2005b].

If migrants and their children are supposed to stay and actively participate in the labor market, we should know how foreigners fared on the German labor market in the past. Although the living and working situation of older foreigners has drawn some atten-

¹⁸This opportunity will be used for future research, also including regional aspects and additional variables such as the size of the last employer

tion recently¹⁹, there is only little information about the success or failure of older migrants on the labor market.

In this paper, we are particularly interested in reemployment prospects of non-Germans. Thus we only consider foreigners who have already been successful on the labor market. First of all, we try to quantify the effect of nationality on reemployment prospects. Then we focus on the effect of aging on reemployment chances. In a third step, we picture nationality-based differences in reemployment patterns over the life course.

We show that theoretical considerations about job search, reservation wage and skill accumulation do not provide a clear-cut picture whether aging and foreign nationality are a double barrier for reemployment after job loss. On the one hand, the disadvantages foreigners face in the labor market might decrease over the life course, because older foreigners are supposed to have a higher motivation to accept jobs, to experience a skill accumulation effect or to be positively selected. On the other hand, health and discrimination as well as compositional effects in the occupational structure may lead to a double drawback for older foreigners.

Our results indicate that reemployment prospects are significantly worse for foreigners compared to natives. The gap in reemployment chances increases from 8 percentage points for the prime age group 25–54 years to 12 percentage points for workers aged 55 and over. The overall pattern of the age effect differs significantly between foreigners and natives. Especially between the age of 40 and 54 years, the relative decrease of the reemployment risk compared to the youngest age group is, with 41 percentage points, higher than for Germans (29 percentage points, see Table V). Looking at more refined nationality groups we find that reemployment prospects vary considerably between nationalities. Overall reemployment prospects range from minus 17 percentage points (Greeks) to plus 6 percentage points (people from other industrial countries). Generally reemployment prospects are lower compared to Germans. The disadvantage due to nationality is highest for Greeks and for Asians. Overall differences in reemployment prospects range from minus 17 percentage points (Greeks) to plus 6 percentage points (people from other industrial countries).

Comparing the reemployment patterns over the life course of foreigners with that of natives we find significant differences for foreigners from Asia, Greece, Turkey, and Ex-Yugoslavia. The age effect is less pronounced for people from the former Republic of

Yugoslavia and Asians even in comparison to Germans. Aging is particularly a drawback for foreigners of Greek and Turkish nationality, whose prospects for reemployment are on average about 27 percent below that of natives (see Table VII). Given that 26.9 percent of the total foreign workforce are of Turkish origin, this is alarming.

In their report about the older generation in Germany [BMFSFJ 2005a], emphasizes the necessity to identify the causes why foreigners' labor-market prospects are less favorable than Germans'. In this paper

- we quantified the extent to which foreigners are disadvantaged in getting reemployed after job loss
- we answered the question whether age is an additional drawback for foreigners, and
- we showed that it is highly relevant to distinguish between nationalities.

It became evident that not only sociodemographic determinants like age, education and employment history have to be taken into account. Interactions between potential barriers for reemployment, like in our case nationality and age, should be considered.

Reintegration of foreigners after job loss into the labor market is vital if the society wants to benefit most from labor migration. Attracting foreign workers to slow down the expected lack of skilled labor is one side of the medal, integrating them into the labor market and provide prospects for them in case they stay and come into age is the other.

Acknowledgments

The dataset used for this article is the anonymized IAB Employment Subsample, Basis File 1975 – 1995 and Regional File 1975 – 2001. Data is made available as a scientific use file, provided by the Research Data Center of the German Federal Employment Office in the Research Institute IAB.

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¹⁹See Bauer et al. [2004], BMFSFJ [2005a] and Özcan and Seifert [2005].

References

- AVOLIO, B. J., WALDMAN, D. A., AND MCDANIEL, M. A. 1990. Age and Work Performance in Non-managerial Jobs: The Effects of Experience and Occupational Type. *Academy of Management Journal* 33:407–422.
- BAUER, T. K. AND SINNING, M. 2005. The Savings Behavior of Temporary and Permanent Migrants in Germany. IZA Working Paper Nr. 1632.
- BAUER, T. K., VON LOEFFELHOLZ, H. D., AND SCHMIDT, C. M. 2004. Wirtschaftsfaktor ältere Migrantinnen und Migranten in Deutschland. Stand und Perspektiven. In Expertise im Auftrag der Sachverständigenkommission "5. Altenbericht der Bundesregierung". RWI Essen.
- BENDER, S. AND KARR, W. 1993. Arbeitslosigkeit von ausländischen Arbeitnehmern. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 26(2):192–206.
- BENDER, S., RÜRUP, B., SEIFERT, W., AND SESSELMAIER, W. 2000. Migration und Arbeitsmarkt. In Migrationsreport 2000. Bade, Klaus J. and Rainer Münz.
- BLANCHET, D. 1989. Regulating the Age Structure of a Population Through Migration. *Population English Selection No. 1* 44:23–37.
- BLOSSFELD, H.-P., HAMERLE, A., AND MAYER, K. 1986. Ereignisanalyse: Statistische Theorie und Anwendung in den Wirtschafts- und Sozialwissenschaften. Campus Studium, Frankfurt/New York.
- BLOSSFELD, H.-P. AND ROHWER, G. 1995. Techniques of Event History Modeling: New Approaches to Causal Analysis. Lawrence Erlbaum Associates.
- BMFSFJ 2005a. Fünfter Bericht zur Lage der älteren Generation in der Bundesrepublik Deutschland.
- BMFSFJ 2005b. Report of the Commissary for Migration, Refugees and Integration on the Situation of Foreigners in Germany.
- BOGAI, D., HESS, D., SCHRÖDER, H., AND SMID, M. 1994. Binnenstruktur der Langzeitarbeitslosigkeit älterer Männer und Frauen. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 27.
- BRASCHE, U. AND WIELAND, S. 2000. Alter und Innovation. *Vierteljahreshefte zur Wirtschaftsforschung* 69:124–141.
- BÖRSCH-SUPAN, A., DÜZGÜN, I., AND WEISS, M. 2005. Altern und Produktivität: Zum Stand der Forschung. Unpublished Report, MEA Mannheim.
- BÜSCH, V., DAHL, S.-G., AND DITTRICH, D. A. V. 2004. Age Discrimination in Hiring Decisions : A Comparison of Germany and Norway. In Papers on Strategic Interaction, No. 14. Max-Planck-Institut zur Erforschung von Wirtschaftssystemen.
- CARLINER, G. 1982. The Wages of Older Men. *Journal of Human Resources* 17:25–38.
- CHISWICK, B. R. 1978. The Effect of Americanization on the Earnings of Foreign-Born Men. *Journal of Political Economy* 67(1):897–921.
- CONSTANT, A. AND MASSEY, D. S. 2005. Labor Market Segmentation and the Earnings of German Guestworkers. *Population Research and Policy Review* 24 (6):5–30.
- EBBINGHAUS, B. 2006. Globalization, Uncertainty and Late Careers in Society, chapter Foreword. London: Routledge.
- FAHRMEIR, L., LANG, S., WOLFF, J., AND BENDER, S. 2003. Semiparametric Bayesian Time-Space Analysis of Unemployment Duration. *Allgemeines Statistisches Archiv* 87:281–307.
- FALICK, B. 1991. Unemployment Insurance and the Rate of Re-Employment of Displaced Workers. *The Review of Economics and Statistics* 73:228–235.
- FEDERAL EMPLOYMENT OFFICE 2005. Arbeitsstatistik 2004 - Jahreszahlen. Federal Employment Office.
- FELDMAN, D. 1994. The Decision to Retire Early: A Review and Conceptualization. *Academy of Management Review* 19:285–311.
- FERTIG, M. AND SCHMIDT, C. M. 2001. First- and Second-Generation Migrants in Germany – What Do We Know and What Do People Think. *IZA Discussion Paper No. 286*.
- FITZENBERGER, B. AND WILKE, R. 2004. Unemployment Durations in West-Germany Before and After the Reform of the Unemployment Compensation System During the 1980s. In ZEW Discussion Paper No. 24, volume 24.
- FROSCH, K. 2006. Reemployment Rates over the Life Course: Is there still Hope after Late Career Job Loss? In Thuenen-Series of Applied Economic Theory, Working Paper No. 64. Rostock University.
- FSO 2006. Data Base GENESIS. Federal Statistical Office, Germany.
- GILBERG, R., HESS, D., AND SCHRÖDER, H. 1999. Wiedereingliederung von Langzeitarbeitslosen. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 32:281–299.
- GOLDBERG, A., MOURINHO, D., AND KULKE, U. 1995. Labour market discrimination against foreign workers in Germany. *International Migration Papers* 7.
- HARRIS, L. 1981. Aging in the Eighties: America in Transition. *Washington, DC: National Council on Aging*.
- HÖNEKOPP, E. 1987. Aspekte der Ausländerbeschäftigung in Deutschland. Institut für Arbeitsmarkt und Berufsforschung.
- KARR, W. AND APFELTHALER, G. 1981. Zur Dauer der Arbeitslosigkeit. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 14:238–390.
- KLETZER, L. 1998. Job Displacement. *The Journal of Economic Perspectives* 12:115–136.
- LANG, G. 2004. The Difference between Wages and Wage Potentials: Earnings Disadvantages of Immi-

- grants in Germany. *Journal of Economic Inequality* 3:21–42.
- LÜDEMANN, E., WILKE, R., AND ZHAN, X. 2004. Censored Quantile Regressions and the Length of Unemployment Periods in West Germany. *ZEW Discussion Paper* 57.
- PETRONGOLO, B. 2001. Reemployment Probabilities and Returns to Matching. *Journal of Labor Economics* 19:716–741.
- PIORE, M. J. 1979. *Birds of Passage: Migrant Labor in Industrial Society*. Cambridge University Press.
- ROGSTAD, J. AND RAAUM, O. 1997. Utstøting fra arbeidsmarkedet blant arbeidstakere med innvandrerbakgrunn. *SNF-report No. 74*.
- SEIFERT, W. 2001. Berufliche Integration von Zuwanderern in Deutschland. Gutachten für die "Unabhängige Kommission Zuwanderung" beim Bundesministerium des Inneren.
- SKIRBEKK, V. 2003. Age and Individual Productivity: A Literature Survey. *Max Planck Institute of Demographic Research Working Paper No.28* 028.
- STOCK, J. AND WISE, D. 1990. Pensions, the Option Value of Work, and Retirement. *Econometrica* 58:1151–80.
- TEACHMAN, J. D. 1982. Methodological Issues in the Analysis of Family Formation and Dissolution. *Journal of Marriage and the Family* 44:1037–1053.
- TROS, F. 2006. Older workers, new directions. Employment and development in an ageing labor market.
- UHLENDORFF, A. AND ZIMMERMANN, K. F. 2006. Differences in Unemployment Dynamics between Migrants and Natives in Germany.
- UN 2000. Replacement Migration: Is it A Solution to Declining and Ageing Populations? *In ESA/P/WP No. 160*. Population Division, Department of Economic and Social Affairs, United Nations Secretariat.
- VERMUNT, J. AND MOORS, G. 2005. *Encyclopedia of Statistics in Behavioral Science*, chapter Event history analysis. Chichester, UK: Wiley.
- WILKE, R. A. 2004. New Estimates of the Duration and Risk of Unemployment for West-Germany. *ZEW Discussion Paper No. 04-26*.
- ÖZCAN, V. AND SEIFERT, W. 2005. Lebenslage älterer Migrantinnen und Migranten - Gutachten für den 5. Altenbericht der Bundesregierung.

Appendices

A. Results for Model 1-5

	Model 1 all	Model 2 25-54 years	Model 3 55-65 years	Model 4 German	Model 5 foreign
Unemployment episodes	385432	333968	51464	333968	57623
Reemployment cases	274502	262610	11892	262610	40036
Reemployment quota	71 %	79 %	23 %	79 %	69 %
Time since job loss	Absolute Baseline Risk (per 1000 person-months)				
month 2-3	81.76	81.22	54.15	80.97	79.97
month 4-6	64.88	64.98	33.02	63.14	71.10
month 7-9	45.71	46.56	14.97	44.13	52.59
month 10-12	39.63	40.49	12.35	38.23	45.79
month 12-18	33.26	33.65	12.30	32.01	38.91
month 18-24	54.10	54.96	16.24	52.37	61.11
Current age	Relative risks				
25-39	1	1		1	1
40-44	0.92 ***	0.93 ***		0.92 ***	0.90 ***
45-49	0.85 ***	0.86 ***		0.86 ***	0.78 ***
50-54	0.69 ***	0.72 ***	1.00	0.71 ***	0.59 ***
55-59	0.24 ***	0.48 ***	0.49 ***	0.24 ***	0.23 ***
60-65	0.08 ***		0.18 ***	0.08 ***	0.10 ***
Period					
1975-1980	1	1	1	1	1
1981-1985	0.74 ***	0.75 ***	0.65 ***	0.76 ***	0.62 ***
1986-1990	0.75 ***	0.77 ***	0.55 ***	0.76 ***	0.66 ***
1991-1995	0.60 ***	0.62 ***	0.38 ***	0.62 ***	0.50 ***
1996-2001	0.64 ***	0.65 ***	0.50 ***	0.65 ***	0.53 ***
Last previous salary					
0-999	1	1	1	1	1
1000-1499	1.27 ***	1.26 ***	1.44 ***	1.29 ***	1.21 ***
1500-1999	1.38 ***	1.38 ***	1.48 ***	1.41 ***	1.24 ***
2000+	1.29 ***	1.35 ***	1.06 **	1.32 ***	1.17 ***
Nationality					
german	1 ***	1	1		
non-german	0.93 ***	0.92 ***	0.88 ***		
Previous unemployment duration (cumulated)					
no previous ue	1	1	1	1	1
up to 5 years	0.98 ***	0.96 ***	1.44 ***	0.96 ***	1.05 ***
5-10 years	0.86 ***	0.84 ***	1.41 ***	0.83 ***	1.00 ***
10-15 years	0.73 ***	0.73 ***	1.07	0.75 ***	0.90
15+ years	0.38 ***	0.62 **	0.00 ***	0.57 **	0.00 ***
Season at start of unemployment					
Jan-Mar	1	1	1	1	1
Apr-Jun	0.74 ***	0.75 ***	0.46 ***	0.73 ***	0.79 ***
Jul-Sept	0.69 ***	0.70 ***	0.41 ***	0.68 ***	0.75 ***
Oct-Dec	0.89 ***	0.90 ***	0.77 ***	0.89 ***	0.93 ***
Education					
no prof. edu.	1	1	1	1	1
prof edu.	1.03 ***	1.06 ***	0.93 ***	1.04 ***	1.09 ***
academic	0.82 ***	0.88 ***	0.59 ***	0.88 ***	0.78 ***
not specified	0.99	1.01	1.06 *	1.00	1.03
Sector					
Manufacturing	1	1	1	1	1
Agri., Min., Energy	1.41 ***	1.34 ***	3.38 ***	1.41 ***	1.41 ***
Construction	1.05 ***	1.00	1.81 ***	1.05 ***	1.09 ***
W+R trade	1.43 ***	1.34 ***	4.13 ***	1.42 ***	1.50 ***
Trans. and Comm.	1.05 ***	0.99	2.42 ***	1.04 ***	1.15 ***
Services	1.18 ***	1.12 ***	2.77 ***	1.18 ***	1.17 ***
NFP and private hhlds	1.04 ***	0.97 ***	2.57 ***	1.00	1.23 ***
Regauth. + soc. ins.	1.12 ***	1.03 ***	3.33 ***	1.10 ***	1.21 ***
not specified	1.58 ***	1.47 ***	4.84 ***	1.60 ***	1.42 ***

Sign. levels : * : 10% ** : 5% *** : 1%

B. Sectoral Distribution for Selected Nationalities (in %)

year	country of origin	sector agriculture/ mining	manufacturing	construction	wholesale and retail trade	services	sample (in persons)
1975	Germany	4.7	49.3	18.1	16.3	11.7	67,087
	Greece	0.5	80.2	6.4	7.2	5.7	944
	Turkey	6.6	68.4	12.3	8.4	4.3	1,678
	Yugoslavia	0.9	49.3	32.9	9.3	7.5	2,148
	Africa	5.1	41.1	18.2	15.3	20.4	236
	Asia	1.8	37.7	7.9	28.9	23.7	114
1985	Germany	4.2	47.1	17.2	16.4	15.1	79,771
	Greece	0.7	74.1	5.9	9.6	9.7	607
	Turkey	5.9	65.4	10.9	9.6	8.2	3,674
	Yugoslavia	1.5	47.1	33.5	9.8	8.0	1,848
	Africa	5.4	44.6	13.9	12.9	23.1	294
	Asia	1.8	38.3	4.6	18.4	36.9	282
1994	Germany	3.2	43.9	16.3	18.3	18.4	83,607
	Greece	-	58.6	6.9	13.4	19.4	751
	Turkey	3.5	59.1	12.7	12.7	11.9	4,540
	Yugoslavia	0.8	37.6	33.6	13.2	14.8	2,569
	Africa	1.9	36.5	8.8	19.9	33.0	534
	Asia	0.5	32.8	5.6	21.6	39.4	786

*Source: Own calculations, based on the anonymized IAB
Employment Subsample 1975-1995*