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Abstract

The empirical literature has shown on numerous occasions that immigrants and their offspring fare worse economically than natives with comparable observable characteristics. This study addresses youth unemployment as an important determinant of youths' later labor market success by looking at the determinants of the hazard of first unemployment after age 17, when compulsory schooling is over. Proportional hazard models show no evidence for a statistically significantly higher risk of becoming unemployed for both first and second generation immigrants compared to natives. However, further differentiating by ethnic background, hazard rates are significantly higher for individuals with Turkish origin compared to Germans, ceteris paribus. These differences vanish only party when controlling for individual, family, and regional characteristics, they differ by gender and immigrant generation, and they are particularly strong for longer unemployment spells.

JEL Codes: J61; J64; J71

Key Words: Immigrants; Labor Market Entry; Youth Unemployment; Survival Time

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1. Introduction

In many ways, immigrants and their offspring fare worse in the labor market than their native peers: considerable earnings differentials exist between the two groups and unemployment rates for both first and second generation immigrants often exceed those of natives by far. Immigrants are also particularly hard hit by the economic crisis of 2008 (OECD, 2010). Data for Germany also show that the average education level of immigrants is consistently below natives' (Konsortium Bildungsberichterstattung, 2006). Taken together, the extant literature suggests that immigrants face much harder labor market conditions than natives and that they are more likely to be left behind and surpassed by their native peers.

This study addresses the incidence of youth unemployment of natives as well as first (FGIs) and second generation immigrants (SGIs). In particular, it considers the determinants of the average time until an individual's first unemployment spell, chosen as a measure of early labor market success and labor market integration. Youth unemployment and the extent to which its incidence differs between immigrants and natives is an important topic, as inequalities for an individual at the early stage of her career may translate into lifelong disadvantages. The idea of increasing inequalities between two groups regarding their future (labor market) outcomes is employed first in Merton's (1968) theory of cumulative advantages. Tomaskovic-Devey et al. (2005) and Brekke and Mastekaasa (2008) adopt this theory for immigrants. Thus, if young immigrants face higher risks of becoming unemployed than natives on average, this may explain part of their relatively 'worse' labor market outcomes later in their working careers as found in the literature.

In the absence of discrimination, and assuming that unobserved ability and motivation do not differ between both groups *on average*, no systematic differences in the early labor market outcomes of immigrants and natives should be expected after controlling for their socio-economic background. This holds especially for second generation immigrants, who

live their entire lives in the host country and are exposed to the same institutional features as their native peers. If, however, differences in economic outcomes still exist, they can be referred to as evidence for a persistent inequality between the groups, an issue of great policy concern in times when Germany, a major immigration country, is seeking immigrants to fill vacant jobs and battle demographic changes.

The present study contributes to the literature by taking a close look not only at general differences in economic outcomes but by focusing on a particularly handicapped group in the labor market, i.e., youths with lower or intermediate secondary school degrees. These individuals typically enter the labor market at an earlier age than their highly educated peers and thus face a higher risk of youth unemployment. The study augments previous work (e.g., Buchholz and Kurz, 2008) that pools individuals of all educational backgrounds and age groups and also does not control for parental background. Addressing three central research questions, the analysis shows that even after controlling for a wide variety of socio-economic characteristics, significant differences in the risk of becoming unemployed between immigrants and natives remain, leaving room for adequate policy response.

2. Previous literature

Extant studies analyzing the labor market entry and employment of youths mainly concentrate on two fields: differences in school-to-work or school-to-school transitions between immigrants and natives or differences in the length of unemployment and the time until finding a new (permanent) job if unemployed. These aspects have been covered for a wide range of host countries; inter alia Sweden, Denmark, Norway, the Netherlands and Germany.

Rooth and Ekberg (2003) find that labor market outcomes of immigrants fall behind native-born Swedes. This holds particularly for immigrants from Southern European

countries. Explicitly looking at the early labor market outcomes for SGIs in Sweden, Tasiran and Tezic (2007) confirm that this group (especially with non-Western European background) exhibits worse labor market outcomes than natives. Nielsen et al. (2003) focus on SGIs in Denmark. They find that while differences in observable characteristics can explain part of the gap between SGIs and natives with respect to education, the effect diminishes when considering the waiting time until the first job. For this outcome, parental capital and neighborhood effects play a larger role. The authors also point to the importance of gender differences in the transition to work, where SGI women face a harder time finding a job than SGI men. For Norway, Støren (2004) provides evidence for significant differences between (non-Western) immigrant and native graduates with respect to both unemployment experience and the duration of unemployment. Using Dutch data, van Ours and Veenman (2003) investigate whether the offspring of immigrants fares better in the educational system than their parents and how they compare to their native peers. Their main finding is that once differences in the characteristics of the parent generation are accounted for, no general differences between SGIs and natives are visible with respect to their educational attainment. However, persistent problems regarding specific ethnic groups, e.g., Turks and Moroccans, remain.

For Germany, various authors have worked on both school-to-work transitions and the occurrence and duration of unemployment for immigrants and natives. Franz et al. (1997) look at the youth labor market entry by means of analyzing the duration of the first spell of non-employment after completion of formal vocational training. They report no significant effect of migratory background on the probability of finding a job. Riphahn (2002) examines school-to-work transitions of young immigrants and natives and finds that immigrants fare worse than natives in employment outcomes. She also considers the educational attainment of SGIs in general, showing that this group lags behind natives even after controlling for further

characteristics (Riphahn, 2003). Uhlendorff and Zimmermann (2006) shed light on differences in the occurrence of unemployment between immigrants and natives. Their results suggest that, ceteris paribus, no differences exist in the quality of jobs immigrants and natives obtain after a period of unemployment (measured by job stability). Instead, immigrants need more time to find stable jobs. However, Turkish SGIs in particular have the greatest difficulties in the labor market. Damelang and Haas (2012) look at the labor market entry of immigrants and find that Turkish individuals face particularly difficult entry conditions that are significantly worse than those of natives or non-Turkish immigrants. Buchholz and Kurz (2008), albeit omitting family background variables, find that immigrants have on average shorter durations in their first jobs and higher unemployment risks than their (West) German peers. Brück-Klingenberg et al. (2011) compare immigrants with Ethnic Germans and with Native Germans. While Ethnic Germans display fewer problems in finding a new job than 'normal' immigrants on average, the difference vanishes once their education is accredited. When education is acquired in Germany, even the gap vis-à-vis native Germans disappears.

A number of lessons can be drawn from these studies. On average, FGIs and SGIs seem to fare worse than their native peers in the labor market. However, once differences in socio-economic characteristics are controlled for, existing gaps become smaller or even disappear, though some immigrant groups (non-Western foreigners, in particular Turks) face greater difficulties in catching up with natives than others. Most authors agree on the importance of three main groups of control variables: (i) personal background variables such as age, gender, etc.; (ii) family background variables such as parental education and employment outcomes, as well as ethnic background; (iii) neighborhood characteristics such as community size and regional fixed effects.

Still, the question what really determines the first 'failure', i.e., the first experience of unemployment, remains unanswered – if anything, the extant literature discusses what

happens after such an event has already occurred. But as noted above and stressed by Merton's theory of cumulative advantages, the real issue lies with this very first 'bad' experience which is largely translated into later labor market success. Hence, in this study, I address the first occurrence of (youth) unemployment as the 'bad' event determining future outcomes, and I describe the underlying forces correlated with its first occurrence.

3. Research questions

As Tasiran and Tezic (2007, p. 813) point out, '[i]t is not clear what hypotheses to use for the early labor market experiences of […] immigrants.' Still, apart from measuring immigrant-native differences in the risk of becoming unemployed, the analysis will concentrate on addressing the following research questions, related to the three groups of control variables mentioned above:

- In the presence of educational expansion which leads to higher shares of youths obtaining higher secondary schooling degrees, the signal value of lower secondary education may have declined over time. Hence, younger graduates from these schools should fare worse in terms of suffering a higher risk of becoming unemployed than their older peers, ceteris paribus (Hypothesis 1a). Given that the share of immigrants with a lower secondary education (*Hauptschule*) degree was higher for immigrants and has decreased over the sample period to more closely match that of natives (see Figure 1),[1] immigrants in older birth cohorts should fare particularly worse than vis-à-vis their native peers, and the difference should be less pronounced for younger birth cohorts. (Hypothesis 1b)

- In line with the literature linking children's economic outcomes to parental background (see, e.g., Solon, 1999) one should expect a negative association of parent's educational attainment with their children's risk of becoming unemployed. Children whose

[1] Similarly, the share of *Realschule*-graduates is initially lower for immigrants and catches up with that of natives over the sample period.

parents have a higher educational background should fare better in the labor market than their peers (holding other factors constant): their parents should be more likely to guide them through the 'troubled waters' of labor market entry given their higher amount of human capital that they transmit to their children. Hazard ratios should ceteris paribus be lower for those individuals who have better educated parents (Hypothesis 2a). Additional analyses test whether male youths respond more to their fathers' outcomes and female youths more to that of their mothers as is proposed in the role-model literature (cf. inter alia Godoy et al. 2006, and the references cited therein). (Hypothesis 2b)

- Finally, the risk of becoming unemployed should be lower in economically strong regions and higher in weaker ones. As regional mobility is very low in Germany (see, e.g., Harhoff and Kane, 1997), abstracting from potential endogenous sorting should yield lower hazard ratios for individuals living in the economically strong Southern regions of Germany (Bavaria, Baden-Wuerttemberg, Hesse) compared to weaker regions in North or central Germany (Hypothesis 3a). However, as (utility-maximizing) immigrants are presumably more mobile than natives concerning the choice of the region they settle in when first arriving, only the most successful of them should be willing to move to regions known to be economically worse off. Hence, because of this positive selection, one would expect a lower hazard ratio for immigrants living in North Germany, where the general economic conditions are worse than in Central or South Germany, ceteris paribus. (Hypothesis 3b)

4. Data and variables

I use monthly data from the 1984 to 2009 waves of the German Socio-Economic Panel (SOEP). The SOEP is a nationally representative longitudinal survey covering approximately 11,000 households and more than 20,000 individuals. It suits for analyzing early labor market outcomes of both immigrants and natives as it offers a wide variety of socio-economic and family background variables. Since immigrants are oversampled, the data contain a

sufficiently large number of observations. For a detailed description of the dataset refer to Wagner et al. (2007) and SOEP (2011).

The analysis focuses on three groups: first generation immigrants, defined as those immigrants born outside of Germany with an own migration experience; second generation immigrants, consisting of the (German-born) offspring of first generation immigrants and those individuals born in Germany with at least one migrant parent; and natives, who are made up of individuals born in Germany, with German parents and German citizenship since birth. As only very few immigrants live in East Germany and the vast majority lives in the West, the analysis is restricted to West Germany. Given the tripartite German secondary school system, it considers two educational groups jointly: those whose highest degree is from *Hauptschule* (lower secondary school) and those who graduated from *Realschule* (intermediate secondary school).[2] *Gymnasium* (higher secondary school) lasts 8-9 years and is the only regular way to college or university entry. Individuals in the *Gymnasium* category are omitted as their labor market entry typically follows much more heterogeneous patterns and their concernment of unemployment is typically much smaller. The analysis focuses on all individuals aged 17 and follows them until their first unemployment event or until they reach age 24, the cut-off age for youth unemployment as defined by the International Labour Organization (see ILO 2011). By the age of 17, compulsory schooling is typically completed for all German pupils, and lower and intermediate secondary schooling degrees are obtained.[3] From that time on youths will be potentially exposed to the labor market and face the threat of unemployment. To get a more complete picture, men and women are investigated both jointly and separately.

[2] Note that both *Hauptschule* and *Realschule* typically last 6 years after primary school and prepare students for blue and white collar jobs, respectively. For a detailed discussion of the German secondary education system see Schnepf (2002).

[3] Another reason for starting the analysis at age 17 is that the SOEP only questions individuals aged 17 and above.

The dependent variable for the analysis is the timing of the first occurrence of (self-reported) registered unemployment for all individuals aged 17 and above. In the SOEP questionnaire, at every wave individuals are asked to indicate their employment status for each month of the previous year. They have the choice to mark 'employed' (full and part time), 'in education', 'working at home', 'retired', and 'registered unemployed'. I compare the individual risk of immigrant and native youths of entering the state 'registered unemployed' for the first time at a given month controlling for a wide range of covariates using a mixed proportional hazard model. Note that individuals may label themselves as being 'registered unemployed' at age 17 even though they are not legally entitled to unemployment benefits yet. A detailed description of the econometric approach is presented in the next section.

As mentioned in Section 2, three major groups of covariates stand out in the literature: individual, parental/family, and neighborhood/local characteristics.

For the first group, a standard set of individual indicators applies, concerning a person's gender, marital status, and birth cohort. For immigrants, good German language proficiency should be of high importance and is hence controlled for.

The second group, i.e., parental and family background variables, includes indicators for the employment status of parents, their occupation (if they are employed), and their educational background. These variables likely differ between immigrants and natives and may largely influence observed differences in labor market outcomes. Additional controls are household size and number of children in the household, as sample statistics show considerable differences between immigrants and natives for these variables.

Finally, the third group of variables considers regional and neighborhood effects. Rural vs. urban background may affect immigrants and natives differently because of the

existence of network effects. Controls for North and South Germany are added to account for different economic conditions in these regions and to address hypothesis 3. In addition, business cycle trends may influence the individual hazard, so I control for year fixed effects.

Tables 1 and 2 give an overview of the sample statistics of the 17-year-olds under consideration.

Table 1 here

Noteworthy are the different shares of students having graduated from the two secondary schools, where the share of natives having graduated from lower secondary school (*Hauptschule*) is lower for natives. Concerning individual labor market participation at age 17, both immigrants and natives display similar patterns.[4]

Turning to the family background characteristics, we observe that both the number of persons as well as the number of children in the household is lower for natives than for FGIs or SGIs. The level of mother's education is relatively equal between FGIs and SGIs, with the average mother having an 89-90 per cent propensity of being low-educated and only a 3-4 per cent propensity of being high-educated.[5] For natives, the figures are 69 and 7 per cent. Fathers' educational achievement is distributed relatively similar, although the share of high-educated fathers is at 25 per cent much higher for natives (FGIs: 3 per cent; SGIs: 8 per cent).

The high share of missing observations in parents' occupational classification is mainly caused by missing information for individuals whose parents are not part of the SOEP. Missing observations for mothers' occupational classification may also reflect the generally lower labor market attachment of women. Table 1 shows that the share of mothers in the top

[4] Note that these descriptive statistics refer to the first month in the year an individual turns 17, i.e., the onset of risk in this analysis. The numbers change to ~40 per cent in both the 'school' and 'further education' category by the end of the year.

[5] Parental educational background was constructed by forming three groups: low-educated parents who have a *Hauptschule*-degree or no degree; medium-educated parents with a *Realschule*-degree; and high-educated parents with an *Abitur* or a *Fachhochschule*-degree (from a higher secondary school).

occupational category (ISCO 1-3) is twice as high for natives (14 per cent) than for FGIs (6 per cent) and SGIs (7 per cent). The opposite is true for the bottom occupational category (ISCO 7-9): here, the share of natives' mothers reaches 13 per cent whereas it reaches 27 and 32 per cent for FGIs and SGIs. Again, these trends are generally mirrored by fathers. Noteworthy, however, is the very low share of FGI-fathers working in top occupations (4 percent) compared to SGI-fathers (12 per cent) and the fathers of natives (28 per cent).

The regional distribution of natives and FGIs/SGIs is relatively similar. The only difference is the higher concentration of natives in the Northern States and of FGIs/SGIs in the Southern States. However, disparities exit in the rural/urban distribution: almost three times as many natives live in small communities (21 per cent) than FGIs or SGIs (8 per cent). More FGIs and SGIs than natives live in communities exceeding 100,000 inhabitants.

Among immigrant specific characteristics, we see differences in the nationality distributions of FGIs and SGIs (see Table 2). The Turkish share is 1.5 times higher for FGIs than for SGIs (38 vs. 23 per cent) whereas the share of Greeks and Italians is higher for the SGIs. The share of FGIs and SGIs having German citizenship is approximately equal (26 and 27 per cent).

Table 2 here

The (self-assessed) language abilities of both groups are relatively similar; however, the share of missing observations is with 29 per cent much higher for SGIs than for FGIs (13 per cent).

5. Empirical approach

This study focuses on analyzing the time until the first occurrence of (youth) unemployment, which marks the first 'disadvantageous' event in youths' labor market career

and also measures how well young adults are integrated in the labor market. I use Cox' (1972) proportional hazard approach to identify the driving factors influencing the time until a 17-year-old individual encounters his or her first (reported) unemployment period.[6]

Kaplan-Meier survival estimates, where the first occurrence of unemployment is considered as 'failure' irrespective of its duration, show the patterns for the three groups (see Figure 2).

Figure 2 here

As the hazard rates for all groups show the same overall age-pattern and the only difference is a shift in the level, I turn to a proportional hazard approach for the analysis of the determinants of the timing until the first unemployment spell (cf. Garret 1998).[7] For a more detailed discussion of the Cox proportional hazard model refer to van den Berg (2001). The idea behind this approach is that individual characteristics exponentially shift the (not explicitly estimated) baseline hazard $(h_0(t))$, which is assumed to be identical for all individuals:

$$h(t|X_i) = h_0(t) * \exp(\beta_1 x_{1i}(t) + \cdots + \beta_k x_{ki}(t) + \varepsilon_i).$$

The risk of individual *i* of having a 'failure' event (here: unemployment) in the interval $[t, t + \Delta t[$ given characteristics X_i and survival until time *t* is expressed as the baseline hazard $h_0(t)$ multiplied by the exponential function of the *k* personal characteristics x_{1i} through x_{ki}. Note that x_{1i} through x_{ki} may be time variant or time invariant variables. If, as is assumed here, the baseline hazard $h_0(t)$ is identical for all individuals and the expected value of the error term is zero, then the ratio of the hazard rates of two individuals *i* and *n* is

[6] The starting point for the analysis for all individuals is January of the year in which the individual turns 17. Assuming equal distributions of birth month for all subgroups (i.e., natives and immigrants), this allows for a consistent estimation of average differences between these subgroups.

[7] For all models, Schoenfeld residual tests (see Grambsch and Thermeau, 1994) reject the null hypothesis of non-zero slope for the immigrant indicators as well as for the entire model, thereby legitimating the use of the proportional hazard model.

$$\frac{h(t|X_i)}{h(t|X_n)} = \frac{\exp(\beta' X_i(t))}{\exp(\beta' X_n(t))}$$

Given an indicator variable IM_i taking on the value 0 if an individual has no migration background and 1 if the person has a migration background, i.e.,

$$IM_i \begin{Bmatrix} = 0 \; for \; natives \\ = 1 \; for \; immigrants \end{Bmatrix}$$

and holding all other covariates constant, the hazard ratio of an immigrant *i* and a native *n* simplifies to

$$\frac{h(t|X_i)}{h(t|X_n)} = \exp(\beta_{(IM)} IM_i).$$

$\exp(\beta_{(IM)} IM_i)$ thus expresses the factor by which the baseline hazard is proportionally shifted when individual *i* is an immigrant ($IM_i = 1$) and person *n* is not ($IM_n = 0$), ceteris paribus.

Following this approach allows identifying whether and to what extent average differences between individuals of varying migration background exist. If such differences are significant even after controlling for a wide range of background characteristics, this could be interpreted as evidence for a (persistent) inequality of one group compared to the other and should be of great policy concern.

The econometric model used for this study is of the following form for an individual's probability of entering unemployment in interval $[t, t + \Delta t[$ given she has not entered before (baseline model):

$$h(t|X_i) = h_0(t) * \exp(\beta_{in}^{'} X_{in\,i}(t) + \beta_f^{'} X_{fi}(t) + \beta_r^{'} X_{ri}(t) + \delta_1 FGI_i + \delta_2 SGI_i + \gamma_t + \varepsilon_i)$$

$X_{in\,i}$, X_{fi}, and X_{ri} refer to individual *i*'s individual, family, and regional characteristics. FGI_i and SGI_i are indicator variables taking on the value of 1 if an individual is a first or second generation immigrant, respectively. γ_t stands for a vector of 25 year dummies

controlling for general business cycle effects. Note that transitions into unemployment could in theory occur at any time during the observed one-month spells. To ease the calculation of the hazard rates I follow Uhlendorff and Zimmermann (2006) in assuming that these transitions occur at the boundaries of the intervals. The same authors also address the initial conditions problem arising in (un)employment analyses by pointing out that 'the initial sample of unemployed individuals cannot be assumed to be random' (Uhlendorff and Zimmermann, 2006, p. 7). However, since I am concerned with the subpopulation of individuals *entering* unemployment, the initial conditions problem can be ignored in this context while at the same time keeping in mind that all results need to be interpreted as describing this subpopulation.[8]

The estimated likelihood function is:

$$L = \prod_{i=1}^{n} \frac{\exp(\beta_x' X_i(t))}{\sum_{j:Y_j \geq Y_i} \exp(\beta_x' X_j(t))}.$$

Tied failures are handled via the Efron (1977) method.

6. Results

In this section, I present the main forces determining the incidence of youth unemployment, examine differences in the hazards for immigrants and natives and show to which extent these are reduced when accounting for differences in the socio-economic background. Table 3 presents the estimation results for the combined sample of males and females when controlling for migration background only. No significant difference exists between both first or second generation immigrants and natives, although the point estimates for the FGI/SGI-indicator are above unity.

[8] In the given sample, only 16 individuals report to be unemployed in the first month of the year in which they turn 17, i.e., at the onset of risk. I therefore refrain from drawing any conclusions from such a small subgroup.

Table 3 here

However, the results for the combined group of immigrants from all sending countries need not be informative once we look at specific countries in more detail. As pointed out in the literature (for recent results see inter alia Uhlendorff and Zimmermann, 2006; Damelang and Haas, 2012), Turkish immigrants face particularly hard times in the labor market. Hence, the remainder of the analysis assesses whether the discrepancies between Turkish immigrants and natives (see Table 4) can be traced back to differences in socio-economic conditions or whether they depict a specific 'cultural heritage' effect of Turks not explainable by observable characteristics.

Table 4 here

While column 1 of Table 4 presents 'raw' average differences between both first and second generation Turkish immigrants and natives (that is, the only covariates are indicators for Turkish and non-Turkish immigrants with natives being the reference category), columns 2 and 3 differentiate further between the different generations. The significant hazard ratio for Turks in column 1 seems to be driven mostly by Turkish second generation immigrants (see column 3). The latter appear to be an especially deprived group, while the hazard ratio is insignificant (though still above unity) for the first generation.

Table 5 highlights the contribution of certain groups of covariates in explaining the observable differences between Turkish immigrants, non-Turkish immigrants, and natives by using two approaches. As the covariates themselves are likely correlated with each other, Panel A of Table 5 selectively *in*cludes certain groups of covariates to the model including only indicators for Turkish and non-Turkish immigrants, with natives as the reference group. Likelihood-ratio tests show that including year dummies, individual characteristics and regional characteristics significantly improves the explanatory power of the model, whereas

parental and family attributes do not enter significantly. However, including the latter group leads to the biggest change in the hazard ratios for Turkish and non-Turkish immigrants, which are then no longer significant. Panel B of Table 5 presents the results of selectively *ex*cluding certain groups of covariates from the full model (Model 1). Here, likelihood-ratio tests show that omitting year dummies or regional characteristics significantly alters the results. Not accounting for individual characteristics or parental attributes does not lead to a significant worsening of the model in statistical terms, although in both cases the hazard ratios for Turkish as well as non-Turkish immigrants change substantially.

Table 5 here

Concluding this short overview, one should keep in mind that the biased estimate of both the Turkish and non-Turkish indicators in the model without further covariates (Panel A, Model 1) is driven by all groups of omitted covariates and not just one. Given the correlations between the covariates themselves, leaving out either group may lead to questionable results. Still, as I cannot be certain that the preferred model incorporates all the necessary covariates, all further results should not be taken as causal effects but rather as associations.

The following interpretation refers to the results shown in Table 5, Panel B, Model 1, with all groups of covariates. The hazard ratio for Turkish immigrants is distinctly above unity (1.55), though not statistically significant. Non-Turkish immigrants also have a higher risk of becoming unemployed than natives, ceteris paribus (hazard ratio 1.24); however, the point estimate is also not statistically significant.

Individuals who were born prior to 1970 have on average lower hazard ratios than those born between 1970 and 1979, whereas individuals who were born in 1980 or later face a higher risk of becoming unemployed, ceteris paribus. This result is in favor of Hypothesis 1a; however, while sizeable in magnitude, these associations are not statistically significant. High

parental education is associated with a lower risk of becoming unemployed. This result is in line with the hypothesis that 'smarter' parents seem to be able to transmit their knowledge about (labor market) success to their children (Hypothesis 2a).

Individuals in the Southern region of face statistically significantly lower risks of becoming unemployed than their peers in the central or Northern regions of Germany, ceteris paribus. This result is in line with Hypothesis 3a, which predicts lower hazard rates for individuals living in regions with economically favorable conditions. While individuals in urban environments (community size >100,000 inhabitants) also face a lower risk of becoming unemployed, the estimated hazard ratio is insignificant.

Separate estimations for FGIs and SGIs highlight whether the observed patterns from the combined sample also hold in the two subgroups. Table 6 presents the same set of estimations as before for FGIs. For them, the hazard ratio of the Turkish-indicator is slightly lower than the one in the combined sample but also statistically insignificant. Turkish-born immigrants are thus statistically no different from their native peers in terms of the overall risk of becoming unemployed, ceteris paribus. The indicator for non-Turkish FGIs is below unity.

Table 6 here

We find evidence in favor of all three hypotheses: individuals born prior to 1970 face a significantly lower risk of becoming unemployed than their later-born peers; those individuals with better educated parents have lower hazard ratios (statistically significant especially for highly educated fathers); and living in an economically potent region (South Germany) is associated with a lower risk of becoming unemployed as well.

Table 7 presents the results for SGIs. Even when controlling for socio-economic variables, having a Turkish migration background is associated with a statistically

significantly higher risk of becoming unemployed than natives, ceteris paribus (hazard ratio 2.34). Non-Turkish immigrants, too, face a significantly higher risk of becoming unemployed as their native peers (hazard ratio 1.99).

Table 7 here

Still, the evidence speaks in favor of the three hypotheses. Although not statistically significant, earlier birth cohorts are associated with having a lower risk of becoming unemployed (Hypothesis 1a), and while having well (poorly) educated parents no longer significantly decreases (increases) the risk of becoming unemployed, the estimated hazard ratios are still below (above) unity, as expected in Hypothesis 2a. The hazard ratios for individuals living in South (North) Germany are statistically significantly below (above) unity, as predicted by Hypothesis 3a.

So far, the analysis establishes three noteworthy observations. First, omitting further covariates and only including indicators for Turkish and non-Turkish immigrants in the analysis of the risk of becoming unemployed leads to (downward) biased estimates of the hazard ratios. Second, because of correlations between the covariates themselves, all three groups of covariates should be used jointly in a model. Third, family background variables seem to be a particularly important driving factor in the analysis of FGIs, while individual characteristics have the greatest influence in the analysis of SGIs. However, the above analyses do not consider potential differences with respect to gender. Differentiating by sex, the picture changes (see Table 8).

Table 8 here

As was the case before, it seems that second generation immigrants face a particularly high risk of unemployment compared to natives, ceteris paribus. This result holds for both Turkish and non-Turkish individuals. Differences between FGIs and natives, on the other

hand, are much less pronounced and not statistically significant. SGI females display the highest hazard ratios compared to their native peers (2.51 for Turkish and 2.43 for non-Turkish women).

The differentiation by gender allows addressing Hypothesis 2b, which suggests a stronger link between young females' outcomes and their mothers' education and young males' outcomes and their fathers' education than vice versa. In line with this hypothesis, Table 8 confirms that having well educated fathers particularly benefits young men (the association is highly significant), whereas the effect is negligible and insignificant for young women. Highly educated mothers positively influence their daughters (in terms of lower hazard ratios), while the hazard ratios for their sons are above unity. However, the results for low educated parents are somewhat puzzling: while the association is insignificant and close to unity in the gender-pooled sample, having a father with low education is associated with (significantly) *lower* risks of becoming unemployed for young males and higher risk of becoming unemployed for females. Although insignificant, this pattern is repeated also for low educated mothers. Overall, it seems that the favorable influence of parents on their offspring is stronger when parent and child are of the same gender, which would be in line with Hypothesis 2b.

Hypotheses 1b and 3b are addressed by including interaction terms between the birth cohort indicators and Turkish/Non-Turkish groups as well as between the regional indicators and the ethnic background indicators.

Table 9 here

Hypothesis 1b suggests that differences in the birth cohort-effect between immigrants and natives are less pronounced for later birth cohorts as the shares of *Hauptschule* and *Realschule* graduates in both groups become more similar over time. The second column of

Table 9 addresses this issue by having a closer look at birth cohort differences by nationality. For this analysis, the main indicators for 'Turkish', 'non-Turkish', 'born before 1970', and 'born after 1980' are omitted and eight new indicators for the relevant interactions were created with 'native & born 1970-79' being the reference group. The estimated hazard ratio for natives born prior to 1970 is significantly below unity signaling a lower risk of becoming unemployed for members of this group compared to the reference. The hazard ratios for both Turkish hand non-Turkish immigrants are slightly above unity, though insignificant. They are, however, statistically different from that of natives for the same age group (p=0.09 and p=0.07). It thus appears that natives born before 1070 have an advantage compared to immigrants concerning the risk of becoming unemployed. To confirm Hypothesis 1b, the difference in hazard ratios by birth cohort must be smaller for younger cohorts. While all hazard ratios are above unity, the group 'born after 1980 & Turkish' stands out: members of this group not only face a significantly higher risk of becoming unemployed than natives born between 1970-1979, they also face significantly higher risks of becoming unemployed than both natives and non-Turkish immigrants of the same age group (p=0.02 and p=0.00). Instead of shrinking, the gap between Turks and natives seems to be widening over time, while differences between non-Turkish immigrants and natives seem to disappear over time (the difference in hazard ratios is not statistically significant). Hypothesis 1b is therefore only confirmed for Non-Turkish immigrants.[9]

Hypothesis 3b states that as immigrants are more mobile than natives concerning the choice of the region they settle in upon arrival, only the most successful ones should be willing to move to regions known to be economically worse off. Hence, one would expect a relatively lower hazard ratio for immigrants living in North Germany, where the general

[9] Of course, this interpretation rests on the assumption that the overall 'quality' of all groups remains the same over time. If younger Turkish immigrants compare negatively to their older peers (and also to natives and non-Turkish immigrants of the same age) with respect to ability or motivation, the significantly higher hazard ratio for younger Turkish immigrants simply reflects these differences (see Borjas 1985 for a discussion of wage differences between immigrants and natives in the US in light of declining immigrant quality).

economic conditions are worse than in Central or South Germany. Colum 3 of Table 9 addresses this question. Here, the main indicators for 'Turkish', 'non-Turkish', 'North Germany', and 'South Germany' are omitted and eight new indicators for the relevant interactions were created with 'native & central Germany' being the reference group. While the hazard ratios for both Turkish and non-Turkish immigrants in North Germany are lower than that of their native peers, the difference is not statistically significant. Looking at South Germany, the results suggest that Turkish immigrants fare significantly worse than their native and non-Turkish peers ($p=0.05$ in both cases), while non-Turkish immigrants do not face higher risks of becoming unemployed than natives in South Germany. In central Germany, Turks again have significantly higher hazard ratios than natives, while the hazard ratios for non-Turkish immigrants are, though above unity, insignificant. Thus, although immigrants (especially those with Turkish background) in South and central Germany seem to fare worse than their native peers, in the economically weaker North German region they seem to fare slightly better than natives. While this result is not statistically significant, it may still be interpreted as (cautiously) speaking in favor of Hypothesis 3b.

7. Robustness checks

The validity of the results is emphasized by several robustness checks applying different model specifications. Using discrete time hazard models (see Prentince and Gloeckler, 1978) leads to a slight increase in the estimated hazard ratios, and the risk of becoming unemployed is now significantly higher for Turkish immigrants compared to natives whereas the p-value for the 'Turkish' category in the Cox-model is only .11. Accounting for unobserved heterogeneity by adding a gamma-distributed frailty term does not

alter the results much (upper panel of Table 10).[10] Applying a piecewise constant exponential model with 7 time intervals leads to virtually the same results as in the original Cox-model. The results do not change when one allows for unobserved heterogeneity (lower panel of Table 10).

Table 10 here

Still, note that all information about (un)employment status in the SOEP is self-assessed by the respondents. Hence, the incidence of becoming unemployed for the first time, which is the trigger for 'failure' used throughout this analysis, may not represent a 'true' unemployment spell and simply be a result of measurement error. To account for this potential bias, estimations are rerun using the first unemployment spell that lasts at least 3 respectively 6 months as the 'failure' trigger. Table 11 shows that such an approach indeed alters the results, leading to substantially higher hazard ratios for both Turkish and non-Turkish immigrants vis-à-vis natives.

Table 11 here

Another potential source of bias stems from an individual's choice of continuing education beyond the compulsory schooling minimum. If the individual decides to opt for an apprenticeship after having finished secondary education, this decision may lead to a postponement of the onset of the risk of becoming unemployed: in other words, those with apprenticeship training should display lower hazard ratios than those without, ceteris paribus. In addition, should immigrants fare systematically worse in obtaining an apprenticeship position (e.g., through employer discrimination), then the higher hazard ratios of immigrants concerning their risk of becoming unemployed for the first time may simply reflect their troubles at the apprenticeship level, thereby leading to an upward bias in the estimated hazard

[10] Note that estimating Cox models with gamma frailty and both Cox and Prentice-Gloeckler models with mass point distributed frailty proved to be computationally impossible. However, van den Berg (2001) points out that single spell data may not suffice to robustly model unobserved heterogeneity anyhow.

ratio. As the decision for pursuing an apprenticeship is an individual choice and therefore endogenous, adding an indicator variable to the preferred model will not capture the 'true' effect of apprenticeship training on the hazard of becoming unemployed. It will, however, help to 'clean' the effect of ethnic background following the above reasoning. Table 12 presents the results of this approach.

Table 12 here

Adding an indicator for apprenticeship slightly alters the results: the hazard ratios for both Turkish and non-Turkish immigrants are higher in the augmented model, leaving no room for the discrimination-based theory outlined above. However, instead of lowering the hazard of becoming unemployed, apprenticeship training is associated with a (significantly) increased risk, ceteris paribus. Still, as the result relies upon the inclusion of an endogenous – and therefore potentially 'bad' – control for apprenticeship training, it should be interpreted with care.

8. Conclusion

The empirical literature on labor market outcomes of immigrants has shown (e.g., Tomaskovic-Devey et al., 2005; Brekke and Mastekaasa, 2008) that immigrants and their offspring fare worse economically than natives with comparable observable characteristics, and that these disadvantages can be traced back to worse starting positions of immigrants vis-à-vis natives, as postulated in Merton's (1968) theory of cumulative advantages. This study addresses youth unemployment and looks at the determinants of an individual's hazard of becoming unemployed for the first time after having reached age 17, as a possible indicator for early labor market outcomes influencing her future career. At age 17, compulsory schooling in Germany is completed, and every young adult is potentially eligible for the labor market.

Using a proportional hazard model and concentrating on lower and intermediate secondary school graduates, both first and second generation immigrants display no generally higher risk of becoming unemployed compared to natives after controlling for individual, family and regional characteristics. This result is in line with, e.g., Franz et al. (1997), who find no significant effect of migratory background on the probability of finding a job.

However, differentiating by ethnic background, hazard rates are particularly large for Turkish immigrants (Germany's largest immigrant population), found to be especially vulnerable also in other studies (e.g., Damelang and Haas, 2012). Although differences with respect to natives recede and are no longer statistically significant when looking at the first generation and controlling for socio-economic background, they are very pronounced for second generation immigrants.[11] When looking at both subgroups and further dividing by gender, female Turkish second generation immigrants display the strongest differences with their native peers even after controlling for the full set of covariates. Turkish males in both the first and second generation do not have a statistically significantly higher risk of becoming unemployed than natives with the same observable characteristics. More pronounced differences between immigrants and natives regarding longer unemployment spells deserve further attention and should be the focus of future research.

The results imply that immigrants on average do not face substantially higher risks of becoming unemployed compared to natives with the same observable. However, the analysis has shown that this result does not hold for all immigrants: second generation Turkish immigrants remain a main target group to shed attention to, especially given the large share of Turks among immigrants to Germany. Equal opportunities in education should be of great concern, as the results indicate that in particular differences in parental education are

[11] It may be that immigrants are not aware of how to apply for unemployment benefits and therefore do not report unemployment in the SOEP questionnaire. In that case, the true extent of the risk of becoming unemployed is systematically underestimated for immigrants. Because of this potential downward bias, the estimated hazard ratios may be considered as representing lower boundaries of the true effect.

associated with large differences in the hazard of becoming unemployed. This finding is particularly relevant in light of the theory of cumulative advantages (Merton, 1968) that predicts less successful future (labor market) outcomes for those individuals facing worse entry conditions.

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Tables

Table 1: Descriptive statistics – individual, family, and neighborhood characteristics, means

	Natives		First gen. immigrants		Second gen.	
Variable	Mean	SD	Mean	SD	Mean	SD
Individual characteristics:						
Male (=1 if person is male, =0 otherwise)	0.50	(0.50)	0.52	(0.50)	0.55	(0.50)
Married (=1 if person is married, =0 otherwise)	0.00	(0.00)	0.01	(0.10)	0.00	(0.04)
Degree achieved						
Hauptschule	0.37	(0.48)	0.46	(0.50)	0.41	(0.49)
Realschule	0.27	(0.44)	0.10	(0.29)	0.20	(0.40)
No degree	0.35	(0.48)	0.44	(0.50)	0.39	(0.49)
Labor market participation						
Miscellaneous	0.00	(0.06)	0.02	(0.12)	0.00	(0.06)
Part time working	0.03	(0.16)	0.01	(0.13)	0.02	(0.15)
Full time working	0.03	(0.22)	0.04	(0.26)	0.03	(0.20)
In school	0.68	(0.50)	0.69	(0.49)	0.72	(0.49)
In education	0.28	(0.48)	0.20	(0.43)	0.23	(0.46)
At home	0.01	(0.01)	0.03	(0.19)	0.01	(0.12)
Retired	0.03	(0.03)	0.01	(0.10)	0.00	(0.06)
Unemployed	0.00	(0.01)	0.02	(0.14)	0.01	(0.11)
Family characteristics:						
Number of persons in household	4.12	(4.12)	5.06	(1.86)	4.53	(1.38)
Number of children in household	1.69	(1.69)	2.43	(1.44)	1.91	(1.02)
Mother characteristics						
Education missing	0.02	(0.02)	0.03	(0.16)	0.01	(0.11)
Low-educated	0.69	(0.69)	0.90	(0.30)	0.89	(0.32)
Medium-educated	0.21	(0.21)	0.03	(0.17)	0.07	(0.25)
High-educated	0.07	(0.07)	0.04	(0.20)	0.03	(0.18)
ISCO 0 & ISCO N.A.	0.52	(0.52)	0.60	(0.49)	0.48	(0.50)
ISCO 1 - 3	0.14	(0.14)	0.06	(0.23)	0.07	(0.26)
ISCO 4 - 6	0.21	(0.21)	0.07	(0.26)	0.13	(0.34)
ISCO 7 - 9	0.13	(0.13)	0.27	(0.45)	0.32	(0.47)
Father characteristics						
Education missing	0.04	(0.04)	0.05	(0.22)	0.03	(0.17)
Low-educated	0.59	(0.59)	0.88	(0.33)	0.83	(0.37)
Medium-educated	0.12	(0.12)	0.04	(0.20)	0.05	(0.23)
High-educated	0.25	(0.25)	0.03	(0.16)	0.08	(0.27)
ISCO 0 & ISCO N.A.	0.24	(0.24)	0.26	(0.44)	0.26	(0.44)
ISCO 1 - 3	0.28	(0.28)	0.04	(0.20)	0.12	(0.32)
ISCO 4 - 6	0.11	(0.11)	0.02	(0.15)	0.05	(0.21)
ISCO 7 - 9	0.37	(0.37)	0.67	(0.47)	0.58	(0.49)
Regional / neighborhood characteristics:						
South Germany	0.46	(0.46)	0.47	(0.50)	0.55	(0.50)
Central Germany	0.33	(0.33)	0.33	(0.47)	0.29	(0.45)
North Germany	0.19	(0.19)	0.17	(0.38)	0.11	(0.32)
Community < 20,000 inhabitants	0.21	(0.21)	0.08	(0.27)	0.08	(0.27)
Community 20,000-100,000 inhabitants	0.58	(0.58)	0.57	(0.50)	0.59	(0.49)
Community > 100,000 inhabitants	0.20	(0.20)	0.35	(0.48)	0.34	(0.47)
Number of persons	1,300		367		605	

Source: SOEP v27, years 1984-2009.

Table 2: Descriptive statistics – immigrant background characteristics, means

	First gen. immigrants		Second gen. immigrants	
Variable	Mean	SD	Mean	SD
Immigrant specific characteristics				
Nationality				
German	0.26	(0.44)	0.27	(0.44)
Turkish	0.38	(0.49)	0.23	(0.42)
Former yugoslavia	0.16	(0.37)	0.16	(0.36)
Greek	0.05	(0.23)	0.11	(0.31)
Italian	0.10	(0.30)	0.17	(0.37)
Spanish / Portuguese	0.02	(0.15)	0.06	(0.25)
Other Western	0.01	(0.07)	0.00	(0.00)
Eastern European	0.02	(0.13)	0.00	(0.00)
Rest	0.01	(0.07)	0.00	(0.06)
Language ability				
Written German (very) good	0.74	(0.44)	0.65	(0.48)
Written German missing	0.13	(0.33)	0.29	(0.45)
Spoken German (very) good	0.78	(0.41)	0.68	(0.47)
Spoken German missing	0.13	(0.33)	0.29	(0.45)
Number of persons	367		605	

Source: SOEP v27, years 1984-2009.

Table 3: Estimation results, Cox proportional hazard model, no controls

Variable	Haz. ratio	(Std. error)
individual characteristics		
Native	*-Reference-*	
First generation immigrant	1.064	(0.107)
Second generation immigrant	1.139	(0.094)
Number of persons	2,258	
Number of observations	132,028	
Log-likelihood	-5,778.09	

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 4: Estimation results, Cox proportional hazard model, Turks, no controls

	Combined		FGI		SGI	
Variable	Haz. ratio	(Std. error)	Haz. ratio	(Std. error)	Haz. ratio	(Std. error)
individual characteristics						
Native	*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.298 **	(0.140)	1.183	(0.176)	1.429 **	(0.201)
Not Turkish	1.043	(0.083)	0.999	(0.124)	1.067	(0.097)
Number of persons	2,258		1,657		1,896	
Number of observations	132,028		97,985		111,569	
Log-likelihood	-5,776.55		-3,990.85		-4,737.45	

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 5: Estimation results, Cox proportional hazard model, Turks, combined sample (FGI+SGI)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Panel A: Selective inclusion	*No further controls*		*with year dummies*		*with indiv. charact.*		*with family charact.*		*with regional charact.*	
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.298 **	(0.140)	1.395 **	(0.152)	1.581 *	(0.419)	1.159	(0.139)	1.314 **	(0.144)
Not Turkish	1.043	(0.083)	1.040	(0.084)	1.214	(0.329)	0.976	(0.084)	1.085	(0.088)
Number of persons	2,258		2,258		2,258		2,258		2,258	
Number of observations	132,028		132,028		132,028		132,028		132,028	
Log-likelihood	-5,776.55		-5,742.55		-5,767.57		-5,767.46		-5,767.47	
Likelihood-ratio test value (reference: Model 1)			68.01 ***	(25 df)	17.96 **	(8 df)	18.19	(14 df)	18.18 ***	(4 df)
Panel B: Selective exclusion	*Full model*		*without year dummies*		*without indiv. charact.*		*without family charact.*		*without regional charact.*	
individual characteristics										
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)	1.475	(0.402)	1.218	(0.150)	1.750 **	(0.466)	1.477	(0.399)
Not Turkish	1.236	(0.343)	1.192	(0.330)	0.987	(0.088)	1.357	(0.370)	1.160	(0.321)
Male (=1 if person is male, =0 if female)	1.002	(0.073)	+				+		+	
Married (=1 if person is married, =0 otherwise)	0.883	(0.155)	+				+		+	
Born before 1970	0.799	(0.129)	+				+		+	
Born 1970-1919	*-Reference-*		*-Reference-*				*-Reference-*		*-Reference-*	
Born after 1980	1.218	(0.232)	+				+		+	
Written German (very) good	0.682 *	(0.141)	+				+		+	
Spoken German (very) good	1.110	(0.347)	+				+		+	
German info missing	0.832	(0.245)	+				+		+	
Family characteristics										
Mother educ missing	1.139	(0.322)	+		+				+	
Mother low-educated	1.045	(0.118)	+		+				+	
Mother medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother high-educated	0.868	(0.165)	+		+				+	
Father educ missing	0.810	(0.199)	+		+				+	
Father low-educated	1.015	(0.135)	+		+				+	
Father medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father high-educated	0.754 *	(0.115)	+		+				+	

Table 5 continued

Mother ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother ISCO 1-3	1.084	(0.137)	+		+				+	
Mother ISCO 4-6	0.919	(0.099)	+		+				+	
Mother ISCO 7-9	0.953	(0.095)	+		+				+	
Father ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father ISCO 1-3	0.906	(0.110)	+		+				+	
Father ISCO 4-6	0.874	(0.134)	+		+				+	
Father ISCO 7-9	1.023	(0.096)	+		+				+	
Number of persons in household	0.987	(0.036)	+		+				+	
Number of children in household	1.032	(0.058)	+		+				+	
Regional / neighborhood characteristics:										
North Germany	1.206 *	(0.121)	+		+		+			
Central Germany	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
South Germany	0.833 **	(0.070)	+		+		+			
Community < 20,000 inhabitants	0.991	(0.106)	+		+		+			
Community 20,000-100,000 inhabitants	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
Community > 100,000 inhabitants	0.904	(0.078)	+		+		+			
year dummies	*Yes*		*No*		*Yes*		*Yes*		*Yes*	
Number of persons	2,258		2,258		2,258		2,258		2,258	
Number of observations	132,028		132,028		132,028		132,028		132,028	
Log-likelihood	-5,722.77		-5,750.50		-5,726.07		-5,731.31		-5,730.33	
Likelihood-ratio test value (reference: Model 1)			55.46 ***	(25 df)	6.61	(8 df)	17.08	(14 df)	15.12 ***	(4 df)

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 6: Estimation results, Cox proportional hazard model, Turks, FGI

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Panel A: Selective inclusion	*No further controls*		*with year dummies*		*with indiv. charact.*		*with family charact.*		*with regional charact.*	
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.183	(0.176)	1.373	(0.212)	1.264	(0.443)	1.089	(0.178)	1.197	(0.182)
Not Turkish	0.999	(0.124)	0.990	(0.123)	0.937	(0.350)	0.907	(0.122)	1.002	(0.125)
Number of persons	1,657		1,657		1,657		1,657		1,657	
Number of observations	97,985		97,985		97,985		97,985		97,985	
Log-likelihood	-3,990.85		-3,962.73		-3,983.83		-3,981.67		-3,982.22	
Likelihood-ratio test value (reference: Model 1)			56.23 ***	(25 df)	14.03 *	(8 df)	18.36 **	(14 df)	17.25 ***	(4 df)
Panel B: Selective exclusion	*Full model*		*without year dummies*		*without indiv. charact.*		*without family charact.*		*without regional charact.*	
individual characteristics										
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.274	(0.456)	1.225	(0.440)	1.226	(0.206)	1.389	(0.487)	1.212	(0.432)
Not Turkish	0.877	(0.335)	0.887	(0.331)	0.879	(0.120)	0.964	(0.361)	0.855	(0.326)
Male (=1 if person is male, =0 if female)	1.058	(0.091)	+				+		+	
Married (=1 if person is married, =0 otherwise)	0.885	(0.191)	+				+		+	
Born before 1970	0.648 **	(0.119)	+				+		+	
Born 1970-1919	*-Reference-*		*-Reference-*				*-Reference-*		*-Reference-*	
Born after 1980	1.104	(0.253)	+				+		+	
Written German (very) good	0.975	(0.299)	+				+		+	
Spoken German (very) good	1.027	(0.437)	+				+		+	
German info missing	1.042	(0.475)	+				+		+	
Family characteristics										
Mother educ missing	1.082	(0.336)	+		+				+	
Mother low-educated	0.930	(0.114)	+		+				+	
Mother medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother high-educated	1.000	(0.198)	+		+				+	
Father educ missing	0.789	(0.221)	+		+				+	
Father low-educated	1.048	(0.154)	+		+				+	
Father medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father high-educated	0.737 *	(0.124)	+		+				+	

Table 6 continued

Mother ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother ISCO 1-3	1.006	(0.141)	+		+				+	
Mother ISCO 4-6	0.855	(0.106)	+		+				+	
Mother ISCO 7-9	1.092	(0.135)	+		+				+	
Father ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father ISCO 1-3	0.904	(0.124)	+		+				+	
Father ISCO 4-6	0.839	(0.145)	+		+				+	
Father ISCO 7-9	0.991	(0.113)	+		+				+	
Number of persons in household	0.970	(0.042)	+		+				+	
Number of children in household	1.011	(0.070)	+		+				+	
Regional / neighborhood characteristics:										
North Germany	1.391 ***	(0.160)	+		+		+			
Central Germany	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
South Germany	0.908	(0.091)	+		+		+			
Community < 20,000 inhabitants	1.031	(0.120)	+		+		+			
Community 20,000-100,000 inhabitants	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
Community > 100,000 inhabitants	0.926	(0.099)	+		+		+			
year dummies	*Yes*		*No*		*Yes*		*Yes*		*Yes*	
Number of persons	1,657		1,657		1,657		1,657		1,657	
Number of observations	97,985		97,985		97,985		97,985		97,985	
Log-likelihood	-3,943.51		-3,967.08		-3,946.71		-3,952.44		-3,951.04	
Likelihood-ratio test value (reference: Model 1)			47.13 ***	(25 df)	6.39	(8 df)	17.85	(14 df)	15.05 ***	(4 df)

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 7: Estimation results, Cox proportional hazard model, Turks, SGI

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Panel A: Selective inclusion	*No further controls*		*with year dummies*		*with indiv. charact.*		*with family charact.*		*with regional charact.*	
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.429 **	(0.201)	1.395 **	(0.199)	2.368 **	(0.933)	1.253	(0.189)	1.457 **	(0.207)
Not Turkish	1.067	(0.097)	1.053	(0.097)	1.799 *	(0.694)	1.004	(0.097)	1.139	(0.106)
Number of persons	1,896		1,896		1,896		1,896		1,896	
Number of observations	111,569		111,569		111,569		111,569		111,569	
Log-likelihood	-4,737.45		-4,711.31		-4,726.99		-4,727.42		-4,725.30	
Likelihood-ratio test value (reference: Model 1)			52.29 ***	(25 df)	20.92 ***	(8 df)	20.06	(14 df)	24.30 ***	(4 df)
Panel B: Selective exclusion	*Full model*		*without year dummies*		*without indiv. charact.*		*without family charact.*		*without regional charact.*	
individual characteristics										
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	2.253 **	(0.902)	2.239 **	(0.901)	1.206	(0.188)	2.566 **	(1.009)	2.130 **	(0.847)
Not Turkish	1.918 *	(0.754)	1.869 *	(0.734)	1.037	(0.103)	2.105 *	(0.818)	1.739	(0.680)
Male (=1 if person is male, =0 if female)	0.954	(0.076)	+				+		+	
Married (=1 if person is married, =0 otherwise)	0.927	(0.198)	+				+		+	
Born before 1970	0.852	(0.157)	+				+		+	
Born 1970-1919	*-Reference-*		*-Reference-*				*-Reference-*		*-Reference-*	
Born after 1980	1.298	(0.265)	+				+		+	
Written German (very) good	0.444 ***	(0.124)	+				+		+	
Spoken German (very) good	1.137	(0.520)	+				+		+	
German info missing	0.548	(0.225)	+				+		+	
Family characteristics										
Mother educ missing	1.278	(0.381)	+		+				+	
Mother low-educated	1.065	(0.124)	+		+				+	
Mother medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother high-educated	0.972	(0.191)	+		+				+	
Father educ missing	0.883	(0.234)	+		+				+	
Father low-educated	1.033	(0.144)	+		+				+	
Father medium-educated	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father high-educated	0.779	(0.122)	+		+				+	

Table 7 continued

Mother ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Mother ISCO 1-3	1.028	(0.139)	+		+				+	
Mother ISCO 4-6	0.958	(0.108)	+		+				+	
Mother ISCO 7-9	0.949	(0.106)	+		+				+	
Father ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*				*-Reference-*	
Father ISCO 1-3	0.910	(0.116)	+		+				+	
Father ISCO 4-6	0.872	(0.139)	+		+				+	
Father ISCO 7-9	1.073	(0.111)	+		+				+	
Number of persons in household	0.970	(0.040)	+		+				+	
Number of children in household	1.107	(0.074)	+		+				+	
Regional / neighborhood characteristics:										
North Germany	1.328 ***	(0.145)	+		+		+			
Central Germany	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
South Germany	0.796 **	(0.073)	+		+		+			
Community < 20,000 inhabitants	0.981	(0.111)	+		+		+			
Community 20,000-100,000 inhabitants	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*			
Community > 100,000 inhabitants	0.878	(0.085)	+		+		+			
year dummies	*Yes*		*No*		*Yes*		*Yes*		*Yes*	
Number of persons	1,896		1,896		1,896		1,896		1,896	
Number of observations	111,569		111,569		111,569		111,569		111,569	
Log-likelihood	-4,685.31		-4,704.95		-4,690.91		-4,694.01		-4,697.11	
Likelihood-ratio test value (reference: Model 1)			39.30 **	(25 df)	11.21	(7 df)	17.41	(14 df)	23.60 ***	(4 df)

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 8: Estimation results, Cox proportional hazard model, Turks, FGI & SGI, by gender

	Males				Females			
	FGI		SGI		FGI		SGI	
Variable	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Raw difference:								
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.544 **	(0.292)	1.412 *	(0.260)	0.850	(0.208)	1.449 *	(0.318)
Not Turkish	1.081	(0.182)	1.045	(0.130)	0.918	(0.169)	1.088	(0.145)
Log-likelihood	-1,873.44		-2,241.43		-1,719.25		-2,034.67	
With covariates:								
individual characteristics								
Native	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.015	(0.614)	1.767	(1.209)	1.207	(0.610)	2.513 *	(1.251)
Not Turkish	0.529	(0.329)	1.445	(0.978)	1.188	(0.664)	2.435 *	(1.163)
Married (=1 if person is married, =0 otherwise)	0.932	(0.359)	0.688	(0.294)	1.032	(0.279)	1.113	(0.287)
Born before 1970	0.828	(0.210)	1.275	(0.334)	0.500 **	(0.137)	0.581 **	(0.158)
Born 1970-1919	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Born after 1980	0.725	(0.240)	0.966	(0.275)	1.480	(0.492)	1.571 **	(0.473)
Written German (very) good	1.029	(0.364)	0.651	(0.254)	1.705	(1.146)	0.220 *	(0.091)
Spoken German (very) good	1.708	(1.104)	1.074	(0.782)	0.398	(0.293)	1.783	(1.061)
German info missing	1.478	(1.070)	0.620	(0.428)	0.821	(0.525)	0.469	(0.239)
Family characteristics								
Mother educ missing	0.767	(0.387)	0.840	(0.444)	1.593	(0.675)	2.069 *	(0.828)
Mother low-educated	1.194	(0.220)	1.285	(0.213)	0.777	(0.131)	0.926	(0.155)
Mother medium-educated	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Mother high-educated	1.508	(0.401)	1.276	(0.331)	0.729	(0.233)	0.760	(0.237)
Father educ missing	0.861	(0.339)	1.134	(0.440)	0.585	(0.250)	0.634	(0.250)
Father low-educated	0.673 *	(0.141)	0.822	(0.157)	1.431 *	(0.307)	1.268	(0.267)
Father medium-educated	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Father high-educated	0.490 ***	(0.117)	0.658 *	(0.145)	0.980	(0.240)	0.928	(0.217)

Table 8 continued

Mother ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Mother ISCO 1-3	1.139	(0.217)	1.015	(0.189)	0.935	(0.199)	1.100	(0.220)
Mother ISCO 4-6	1.171	(0.199)	1.317 *	(0.204)	0.660 **	(0.123)	0.757 *	(0.128)
Mother ISCO 7-9	1.218	(0.205)	0.943	(0.146)	1.054	(0.197)	0.973	(0.165)
Father ISCO 0 & ISCO N.A.	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Father ISCO 1-3	0.946	(0.187)	0.956	(0.173)	0.857	(0.167)	0.867	(0.160)
Father ISCO 4-6	0.746	(0.187)	0.743	(0.171)	0.907	(0.221)	0.981	(0.224)
Father ISCO 7-9	1.033	(0.173)	1.137	(0.172)	0.928	(0.149)	1.009	(0.150)
Number of persons in household	0.961	(0.059)	0.956	(0.057)	0.963	(0.060)	0.961	(0.055)
Number of children in household	1.073	(0.102)	1.223 **	(0.113)	0.967	(0.100)	1.019	(0.101)
Regional / neighborhood characteristics:								
North Germany	1.439 **	(0.229)	1.380 **	(0.201)	1.394 *	(0.239)	1.268	(0.213)
Central Germany	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
South Germany	0.946	(0.133)	0.726 **	(0.094)	0.902	(0.132)	0.885	(0.118)
Community < 20,000 inhabitants	1.121	(0.183)	1.113	(0.177)	0.934	(0.157)	0.831	(0.136)
Community 20,000-100,000 inhabitants	*-Reference-*		*-Reference-*		*-Reference-*		*-Reference-*	
Community > 100,000 inhabitants	1.060	(0.154)	0.878	(0.117)	0.817	(0.133)	0.852	(0.123)
year dummies	*Yes*		*Yes*		*Yes*		*Yes*	
Number of persons	837		977		820		919	
Number of observations	50,018		58,756		47,967		52,813	
Log-likelihood	-1,830.20		-2,197.95		-1,686.25		-1,995.71	

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 9: Estimation results, Cox proportional hazard model, Turks, combined sample (FGI+SGI), with additional interactions

Variable	Baseline model (Cox PHM)		Model with cohort interactions		Model with region interactions	
	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Native	*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)				
Not Turkish	1.236	(0.343)				
Born before 1970	0.799	(0.129)			0.807	(0.130)
Born 1970-1979	*-Reference-*				*-Reference-*	
Born after 1980	1.218	(0.232)			1.207	(0.230)
Born before 1970 * Native			0.683 **	(0.126)		
Born before 1970 * Turkish			1.169	(0.393)		
Born before 1970 * Non-Turkish			1.207	(0.406)		
Born 1970-79 * Native			*-Reference-*			
Born 1970-79 * Turkish			1.379	(0.404)		
Born 1970-79 * Non-Turkish			1.193	(0.347)		
Born after 1980 * Native			1.183	(0.246)		
Born after 1980 * Turkish			2.744 **	(1.061)		
Born after 1980 * Non-Turkish			1.325	(0.453)		
North Germany	1.206 *	(0.121)	1.232 **	(0.125)		
Central Germany	*-Reference-*		*-Reference-*			
South Germany	0.833 **	(0.070)	0.833 **	(0.070)		
North Germany * Native					1.546 **	(0.197)
North Germany * Turkish					1.275	(0.496)
North Germany * Non-Turkish					1.192	(0.392)
Central Germany * Native					*-Reference-*	
Central Germany * Turkish					1.650 *	(0.487)
Central Germany * Non-Turkish					1.460	(0.445)
South Germany * Native					0.872	(0.099)
South Germany * Turkish					1.561	(0.474)
South Germany * Non-Turkish					1.080	(0.315)
Number of persons	2,258		2,258		2,258	
Number of observations	132,028		132,028		132,028	
Log-likelihood	-5,722.77		-5,718.67		-5,716.92	

Note: Only selected estimates from the full model are presented. ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 10: Robustness checks with different model types

Variable	Baseline model (Cox PHM)		Prentice-Gloeckler model		Prentice-Gloeckler model with gamma frailty	
	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Full model						
Native	*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)	1.678 *	(0.454)	1.765 *	(0.521)
Not Turkish	1.236	(0.343)	1.361	(0.375)	1.402	(0.417)
Number of persons	2,258		2,258		2,258	
Number of observations	132,028		132,028		132,028	
Log-likelihood	-5,722.77		-4,784.81		-4,783.64	

Variable	Baseline model (Cox PHM)		Piecewise constant exponential model		Piecew. const. exp. model with gamma frailty	
	Haz. ratio	Std. error	Haz. ratio	Std. error	Haz. ratio	Std. error
Full model						
Native	*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)	1.520	(0.414)	1.520	(0.414)
Not Turkish	1.236	(0.343)	1.216	(0.338)	1.216	(0.338)
Theta					1.37e-6	(0.001)
Number of persons	2,258		2,258		2,258	
Number of observations	132,028		132,028		132,028	
Log-likelihood	-5,722.77		-1,923.13		-1,923.13	

Note: 7 periods modeled for the piecewise constant model. ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 11: Robustness checks for different unemployment lengths

	Baseline model		Different unemployment lengths			
	at least 1 month		at least 3 months		at least 6 months	
Full model						
Native	*-Reference-*		*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)	1.845 **	(0.545)	2.702 *	(0.821)
Not Turkish	1.236	(0.343)	1.425	(0.429)	2.343 *	(0.723)
Number of persons	2,258		2,259		2,263	
Number of observations	132,028		139,499		147,171	
Log-likelihood	-5,722.77		-4,349.78		-2,945.20	

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

Table 12: Robustness check with added control for apprenticeship

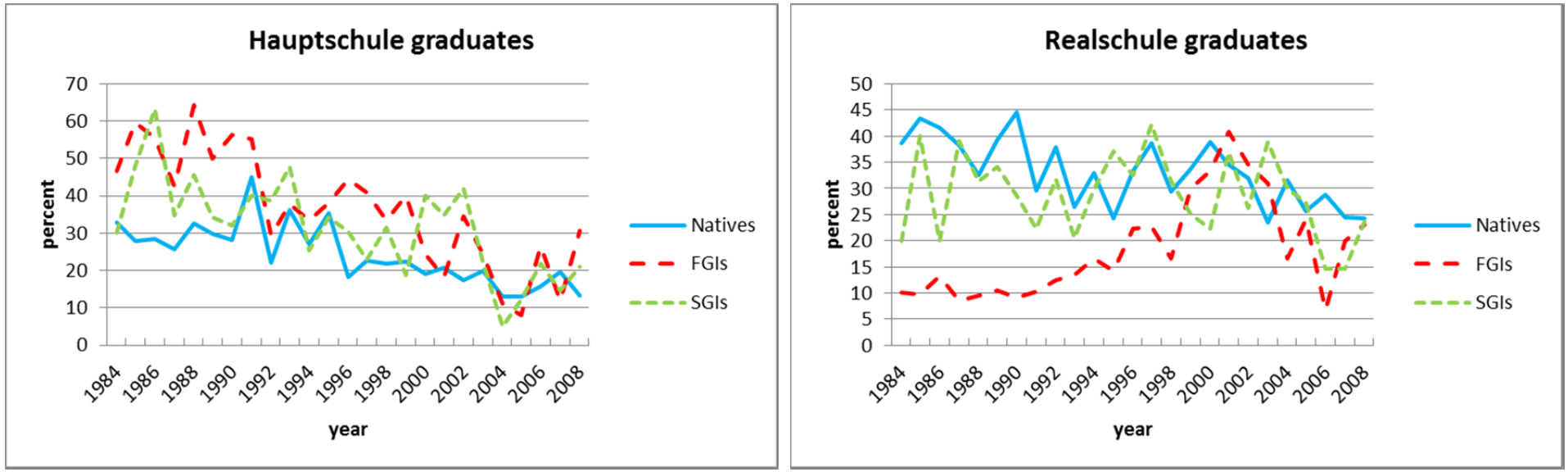
	without apprenticeship		with apprenticeship	
Variable	Haz. ratio	Std. error	Haz. ratio	Std. error
individual characteristics				
Native	*-Reference-*		*-Reference-*	
Turkish	1.554	(0.423)	1.734 **	(0.474)
Not Turkish	1.236	(0.343)	1.331	(0.370)
Apprenticeship (=1 if person has apprenticeship)			1.668 ***	(0.153)
Number of persons	2,258		2,258	
Number of observations	132,028		132,028	
Log-likelihood	-5,722.77		-5,707.79	
Likelihood-ratio test value (reference: Model without apprenticeship)			29.29 *** (1 df)	
AIC	11,549.54		11,521.57	
BIC	12,058.66		12,040.48	

Note: ***/**/* refer to significance at the 10%/5%/1% level.

Source: Own calculations based on SOEP v27, years 1984-2009.

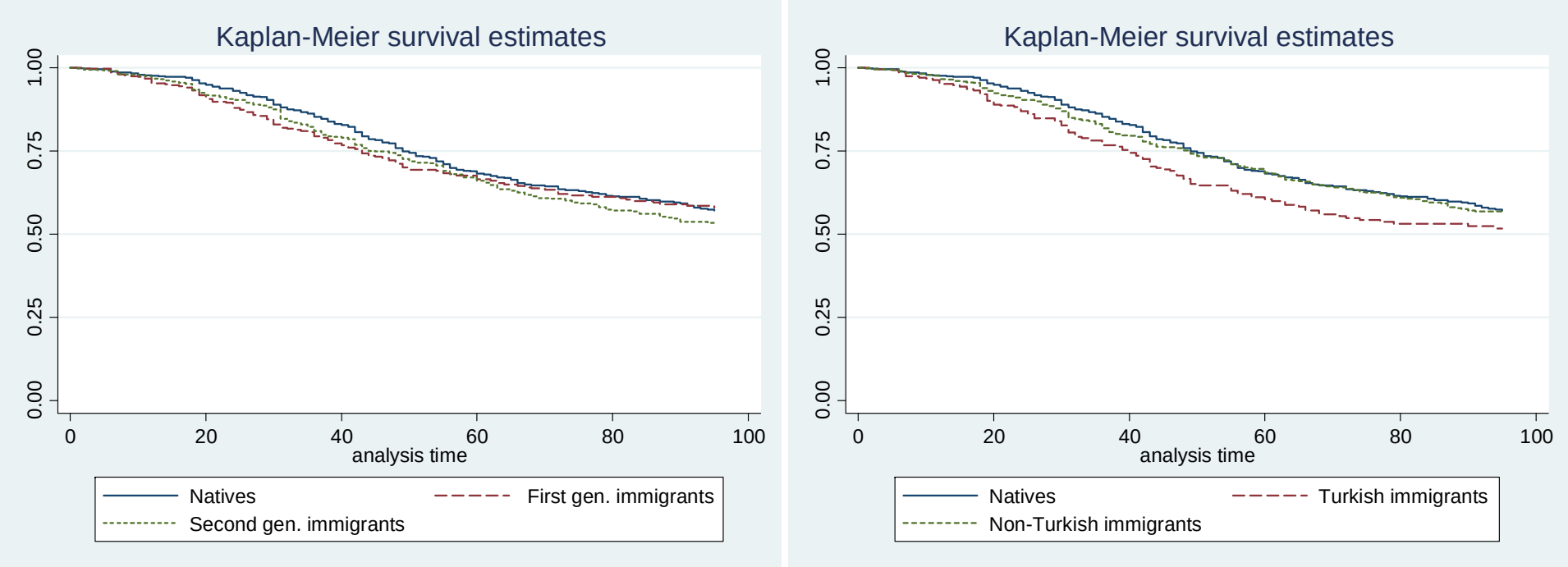
Figures

Figure 1: Share of *Hauptschule* and *Realschule* graduates at age 20 in per cent, by migration background



Left panel: Share of *Hauptschule* graduates at age 20. Right panel: Share of *Realschule* graduates at age 20.
Source: Own calculations based on SOEP v27, years 1984-2008.

Figure 2: Kaplan-Meier survival estimates, failure=first occurrence of unemployment, onset of risk=age 17, time measured in months



Left panel: Natives, FGIs, SGIs. Right panel: Natives, Turkish immigrants, non-Turkish immigrants.
Source: Own calculations based on SOEP v27, years 1984-2009.