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Michael Fertig and Stefanie Schurer

Labour Market Outcomes of Immigrants in Germany

The Importance of Heterogeneity and Attrition Bias

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Michael Fertig and Stefanie Schurer*

Labour Market Outcomes of Immigrants in Germany – The Importance of Heterogeneity and Attrition Bias

Abstract
Heterogeneity in the ethnic composition of Germany's immigrant population renders general conclusions on the degree of economic integration difficult. Using a rich longitudinal dataset, this paper tests for differences in economic assimilation profiles of four groups of foreign-born immigrants and ethnic Germans. The importance of time-invariant individual unobserved heterogeneity and panel attrition in determining the speed of assimilation is analysed. We find evidence for heterogeneity in the assimilation profiles for both annual earnings and unemployment probabilities. Robust assimilation profiles are found for two cohorts only. Omitted variables, systematic sample attrition and the presence of second generation immigrants in the sample influence the speed of assimilation, but do not change the overall picture.

JEL Classification: I12, C23

Keywords: Unobserved heterogeneity, panel attrition, sample selection, fixed effects, migration

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1 Introduction

Since the end of the Second World War, Germany has been facing a multi-faceted immigration experience (Bauer et al., 2005). In the period up to the 1970s immigrants have been actively recruited from Southern Europe to match increased demand for low skilled labour in Germany's postwar economic boom. Since the end of the guest-worker recruitment era in 1973, the ethnic composition of immigration to Germany has changed substantially. Today, Germany has a sizeable community of ethnic Germans who stem predominantly from Eastern European countries and the former Soviet Union. This is a relatively young group of immigrants who arrived during the late 1980s and early 1990s and who received German citizenship upon arrival. Another large group since the 1990s are the politically persecuted and refugees of war. This group in itself is very heterogeneous, including sending countries as diverse as Serbia and Montenegro, Turkey, Algeria, the Democratic Republic of Congo, Nigeria, Afghanistan, Iran and Iraq. This change in ethnic composition among immigrants implies a respectable degree of heterogeneity in the economic position. Expectation about assimilation behaviour should differ for each group.

Assimilation behaviour is traditionally tested in the framework of the assimilation hypothesis, an idea originally proposed by Chiswick (1978). It states that immigrants suffer an initial earnings disadvantage upon arrival vis-à-vis comparable natives. With years of residence, the initial earnings gap is expected to disappear. Immigrants experience a steeper experience-earnings profile than natives, because they invest more in

country-specific human capital accumulation due to lower opportunity cost (Dulep and Regets, 1999). The greater the initial disadvantage, the greater the incentive to acquire country-specific knowledge and therefore the faster the assimilation process. For the US, empirical tests of the assimilation hypothesis predict a catch-up of foreigners with comparable natives after 10 to 15 years (Chiswick, 1978; Carliner, 1980). Immigrants that exceed the average earnings of comparable natives are positively self-selected in terms of unobservable characteristics (Chiswick, 1978). The assimilation hypothesis is criticized by Borjas (1985, 1995) who argues that a positive significant coefficient on years of residence estimated from cross-sectional data captures only a secular decline in the productivity of later immigrant cohorts. Borjas (1985) uses synthetic cohorts, that is following over time samples defined by year of immigration and age. The latter approach is however problematic in itself as it cannot capture selective migration, changes in the composition of samples over time or disentangle longitudinal changes from period effects (Chiswick et al., 2002).

The assimilation hypothesis in the framework of cross-sectional or pooled analysis has been the guiding analytical framework in assessing the degree of economic integration of immigrants in Germany. The majority of empirical work tests for a concave earnings profile of guest-workers assuming the assimilation profile to be homogeneous across cohorts. Various studies yield, however, different results. Bauer et al. (2005), Licht and Steiner (1994) and Pischke (1992) conclude that earnings of immigrants do not assimilate to those of comparable German natives over time, despite a large initial earnings differential upon arrival. Schmidt (1993) and Constant and Massey (2005) find evidence

for assimilation that takes place somewhere between 17 to 23 years, respectively. Initial earnings differentials are explained by education (Schmidt, 1997; Constant and Massey, 2005) or country-of-origin differences (Schmidt, 1992). Others explain the speed of assimilation over time by proxies for the actual investment in destination country-specific human capital. Dustmann (1993, 1994) suggest that intended length of stay and language proficiency are good predictors of economic assimilation.

With respect to unemployment dynamics the literature is more scarce. Early work of Mühleisen and Zimmermann (1994) and Bauer and Zimmermann (1997) concentrate on guest-workers and ethnic German refugees after the Second World War, respectively. Kogan (2005) differentiates between different groups of immigrants and concludes that the higher risk of unemployment among immigrants is largely due to their concentration in stagnating and restructuring industries. Uhlendorff and Zimmermann (2006) show that it is mainly first and second generation Turkish immigrants who face difficulties in finding employment.

In total, it is unclear whether long-run assimilation problems exist and whether these differ across immigrant cohorts. Also, little is known about the labour market assimilation of ethnic Germans[1] and immigrants from other countries-of-origin who arrived during the 1990s.

Given the heterogeneous composition of the current stock of immigrants in Germany, we are asking whether economic assimilation paths differ between groups and whether other forms of unobserved heterogeneity influence the evidence within groups. Between-

[1] Bauer and Zimmermann (1997) is one exception. Their study, however, compares mainly the assimilation behavior of ethnic Germans vis-à-vis East Germans.

group comparison is justified on the basis of assuming cultural differences with respect to work ethics. Taking advantage of rich and high quality longitudinal data (GSOEP), we are able to address both economic and statistical issues. To assess the long-term economic position of immigrants vis-à-vis German natives, this study looks at both earnings and unemployment probabilities over a period of 21 years. Unemployment dynamics may be a better indicator for differences in productivity than earnings given the high degree of unionized wage bargaining and generous unemployment benefits in Germany.

Exploiting the longitudinal nature of our data allows to control for time-invariant, individual unobserved heterogeneity such as ability or latent health. For instance, Toussant-Comeau (2004) stresses the importance of unobserved heterogeneity in determining occupational upward mobility of Hispanics in the US and estimates the assimilation coefficient with a random effects specification. However, a random effects approach is limited to adjusting standard errors only rather than truly controlling for unobserved heterogeneity. In this case parameter estimates of upward mobility are more efficient, but they are still biased due to omitted variable bias. A fixed effects specification would be more appropriate.

The size of our data enables us to account for the influence of quasi-second generation immigrants, which we identify as those who arrived in Germany very young, on outcomes[2]. Age at immigration might be important since immigrants arriving at a very young age in the host country are more likely to acquire destination country-specific human capital such as language skills and knowledge about entry requirements into local labour markets.

[2]Gang and Zimmermann (2000) identify second generation immigrants as those who were either born in Germany or arrived in Germany no older than 16 years of age.

In spite of a variety of advantages, the use of long panel data-sets entail some problems. The longer the sequence of waves the more likely it is that individuals systematically drop out of the sample. Panel attrition may bias estimation results if the probability of leaving the sample, either due to non-response or migration, is systematically linked to labour market outcomes. The empirical literature finds evidence for significant selectivity in exiting behavior, even though biases are rather small (Ayala et al., 2006; Behr, 2004; Behr et al., 2003, 2005; Becketti et al., 1988; Crouchley et al., 2002; Hausman and Wise, 1979; Lillard and Panis, 1998; Zabel, 1998; Ziliak and Kniesner, 1998). The majority of studies investigate attrition bias for the US Panel Study of Income Dynamics (PSID) or the European Community Household Panel (ECHP). For the GSOEP, work is limited to early waves of the data-set and does not differentiate between immigrant sub-groups. Rendtel (1990, 1995) suggest that the impact of socio-economic variables on the probability of participation disappears after the second wave in 1985. Pannenberg (2000) and Spiess and Pannenberg (2003) demonstrate that there is substantial attrition from the GSOEP due to refusal or moving abroad. In the context of economic assimilation only Licht and Steiner (1994) test whether panel attrition in the GSOEP is systematically linked to labour market outcomes of foreigners[3]. Constant and Massey (2005) stress the possibility of biased assimilation coefficients due to selective return-migration. Even though it is impossible to identify the actual return-migration in the GSOEP, we can model the decision to move abroad or the decision to stay in Germany. The underlying idea is that immigrants have a greater probability to move out of Germany than German natives, and thus drop-out

[3]This study models both the labour market participation decision and the return-migration decision of foreigners.

of the sample.

As a point of departure, we test the heterogeneity of economic assimilation profiles by augmenting a standard earnings equation with cohort indicators. Cohorts are distinguished on the basis of changing immigration regimes, i.e. immigrants who arrived between 1955-1968, 1969-1973, 1974-1987, and 1988-2002 and ethnic Germans arriving between 1988 and 2002. To control for unobserved heterogeneity, the same specification is re-estimated by taking differences from the mean. Technically, this method identifies the earnings growth rates of the cohorts over time, but no longer their initial earnings differences. Then, we model two possible sources of attrition bias. The two probabilities of participating in the interview and staying in Germany are corrected with a two-step Heckman sample selection model, modelling the two decision processes simultaneously. These estimates are used to calculate inverse Mills ratios separately for all foreigner cohorts and German natives. The challenge of this procedure is to identify appropriate exclusion restrictions for all groups. Last, we test the sensitivity of our results with respect to the sample definition by eliminating all individuals who could be defined as second generation immigrants. Ultimately, we repeat the same procedure for unemployment probabilities.

We find evidence for heterogeneity in the assimilation profiles across cohorts for both annual earnings and unemployment probabilities. The assimilation hypothesis is confirmed for two cohorts only. Time-invariant unobserved heterogeneity and systematic drop-out of the sample do influence the speed of assimilation of these two groups, but the impact is still statistically significant. A check of robustness with respect to the sample definition leaves results mainly unchanged.

The paper is organized as follows. Section 2 explains the econometric framework with particular focus on the model to control for panel attrition and the choice of exclusion restrictions. Data issues are addressed in Section 3. Section 4 presents the empirical results and a checks for robustness, and in section 5 we summarize the findings.

2 Econometric framework

2.1 Labour market outcomes

To compare the labour market outcome of foreigners relative to German natives we augment a standard Mincer equation of log earnings with years of residence and its square. Let Y_{it} represent real annual gross earnings[4] for individuals $i = 1, \ldots, N$ and $t = 1, \ldots, T_i$ (unbalanced panel) and take the natural logarithm of the column vector $Y_i = [Y_{i1}, \ldots, Y_{iT_i}]'$:

$$\begin{aligned} \ln Y_i &= \alpha + \sum_g D_g \cdot \beta_{g0} + \sum_g D_g \cdot YoR_i \beta_{g1} + \sum_g D_g \cdot {YoR_i}^2 \beta_{g2} + \\ &+ X_i'\theta + W_i'\gamma + H_i'\pi + I_i'\psi + u_i, \end{aligned} \tag{1}$$

where from now on we consider each enlisted variable as a column vector of dimension $T_i \times 1$ and each matrix of dimension $T_i \times k$, k being number of variables. In Eq. (1), 'years of residence' (YoR_i) measures the number of years a foreigner has resided in Germany after entry. The quadratic specification represents the assumption that log earnings are a

[4] We use annual earnings since wages in Germany are relatively rigid. Employees have little influence on the wage determination process. Thus, wages do not necessarily reflect differences in labour market productivity. Lacking wage flexibility is particularly prevalent in the low skill sector, in which the majority of foreigners concentrate.

concave function of years of residence (Chiswick, 1978)[5]. The matrix X_i includes a set of human capital dummy variables which take the value 1 if the individual holds a specific degree or vocational training, and 0 otherwise. We distinguish between five categories for schooling degrees, i.e. 'dropout', 'secondary schooling degree', 'intermediate schooling degree', 'technical schooling degree' and 'upper schooling degree', and four categories of professional training, i.e. 'no vocational training', 'vocation training', 'technocratic training', and 'university degree'. We define German natives to be the reference group captured by the constant α. To allow the productivity to differ between immigrant cohorts (Borjas, 1985, 1995), the coefficients of the intercept β_{g0}, years of residence β_{g1} and its square β_{g2} vary across all four groups of first generation immigrants and ethnic Germans. The subscript g for group refers to Cohort 5568, Cohort 6973, Cohort 7487, Cohort 8802 and ethnic Germans. The dummy variable D_g equals one if the particular individual belongs to sub-group g, and zero otherwise. Years of residence and its square are interacted with each sub-group dummy. The matrix W_i includes a variety of individual-specific variables such as age, number of persons living in the household, marital status, and disability status. Workplace specific variables such as the average hours worked per week and tenure at same firm are captured by the matrix H_i. For immigrants, age at entry into Germany is captured by I_i for the sensitivity analysis only. All other determinants of earnings that cannot be observed are aggregated in the normally distributed zero mean error u_i. The main interest of our analysis are the three parameter vectors β_{g0}, β_{g1}, and

[5]We are aware of the critique by Murphy (1990) and Yuengert (1994) who show that a quadratic specification might not be the appropriate functional form. However, we chose the quadratic simplification since our main interest is to investigate the various sources of bias to the conventionally tested assimilation hypothesis by Chiswick (1978).

β_{g2}. Conditional on the specification, we impose various restrictions on the parameter vectors θ, γ, π, and ψ.

We do not include time fixed effects with which we would capture business cycle variations. If included, we would have to make the assumption that foreigners and German natives are affected equally by business cycle shocks in order to identify the parameters (Borjas, 1994). This is the case because years of residence is a linear combination of the period effect and the year of immigration.

We also refrain from including self-assessed language proficiency as an explanatory variable as proposed by Dustmann (1994) and applied by Constant and Massey (2005). These subjective measures of language proficiency are prone to misclassification error and thus estimated coefficients may be severely biased (Dustmann and Van Soest, 2001). Moreover, language proficiency may be endogenous with respect to labour market earnings.

In a first step, we estimate Eq. (1) by pooled Ordinary Least Squares (POLS), imposing the restriction of a zero coefficient ($\psi = 0$) on the age at entry variable. In the pooled model we take advantage of the largest sample possible, which is particularly important given the small sample sizes of the immigrant sub-cohorts. In a second step, we re-estimate Eq. (1) with a linear fixed effects specification to address potential omitted variable biases due to time-invariant unobserved heterogeneity. Eq. (2) results from the assumption $u_{it} = \alpha_i + \varepsilon_{it}$ and taking differences from the mean. Only parameters of

time-varying variables can be identified.

$$\Delta \ln Y_i = \sum_g D_g \cdot \Delta YoR_i \beta_{g1} + \sum_g D_g \cdot \Delta YoR_i{}^2 \beta_{g2} + \Delta W_i' \gamma + \Delta H_i' \pi + \Delta \varepsilon_i. \qquad (2)$$

For the unemployment equation we specify a pooled probit model in a similar fashion as Eq. (1). Let $U_i^* = [U_{i,1}^*, \ldots, U_{i,T_i}^*]'$ be the true, but unobserved individual propensity of loosing a job. We assume this latent propensity to be a linear function of observable characteristics and an error term:

$$\begin{aligned} U_i^* &= \alpha + \sum_g D_g \cdot \beta_{g0} + \sum_g D_g \cdot YoR_i \beta_{g1} + \sum_g D_g \cdot YoR_i{}^2 \beta_{g2} + \qquad (3) \\ &+ X_i' \theta + W_i' \gamma + F_i' \zeta + I_i' \psi + u_i, \end{aligned}$$

The vectors and matrices are the same as in model (1), except for excluding work related variables in H_i and including F_i, which captures regional variations in unemployment rates. The latent propensity is not directly observable. We observe the variable U_i (registered unemployed) to be one if the true underlying propensity to lose a job is greater than a certain threshold level μ which we normalize to 0:

$$U_i = \begin{cases} 1 & \text{if } U_i^* > 0 \\ \\ 0 & \text{if } U_i^* \leq 0. \end{cases}$$

Assuming the error term to be standard normally distributed $u_i \sim N(0,1)$ yields the

probability to be unemployed:

$$\begin{aligned} Pr(U_i = 1) &= \Phi(\alpha + \sum_g D_g \cdot \beta_{g0} + \sum_g D_g \cdot YoR_i \beta_{g1} + \sum_g D_g \cdot {YoR_i}^2 \beta_{g2} + \\ &+ X_i'\theta + W_i'\gamma + F_i'\zeta + I_i'\psi). \end{aligned} \tag{4}$$

Φ denotes the cumulative standard normal distribution function. Parameter estimates are obtained by Maximum Likelihood.

To control for time-invariant unobserved heterogeneity, we re-estimate model (4) with a nonlinear fixed effects specification. The conditional fixed effects logit (Chamberlain, 1980) assumes a logistic distribution of the error term $u_i \sim \Lambda(0, \frac{\Pi^2}{3})$. It allows to investigate the sub-sample of individuals who changes employment states at least once.

2.2 Panel attrition

The data used are unbalanced, the sequence of nonmissing observations varies across groups or even individuals. In this analysis we consider unit non-response only. On the one hand, individuals may refuse to participate any longer in the interview with no particular reason given. On the other hand individuals may drop out of the sample because they move abroad. If the underlying processes determining labour market outcomes correlates with those shaping the decision to participate or moving abroad OLS estimates are inconsistent (Heckman, 1979). For instance, assume that a disproportionately high share of low-skilled migrants compared to German natives leaves the panel prematurely due to language problems. If this group of low-skilled immigrants also exhibits a lower

earnings potential than the individuals staying in the panel, OLS estimates would be biased upward. Similar arguments hold for the decision to stay in Germany. For instance, if high-skilled migrants exhibit a higher probability to stay in Germany than low-skilled foreigners due to better labor market opportunities, OLS parameter estimates are biased upwards. If this systematic link between the two processes is constant over time, fixed effects estimation eliminates the bias. If not, even fixed effects estimation yields unreliable parameter estimates.

We address systematic panel attrition by assuming the existence of an unobserved variable that affects both the earnings equation and the attrition process. Under the assumption 'missingness on unobservables' (Fitzgerald et al., 1998) the bias can be alleviated with a Heckman sample selection model (Hausman and Wise, 1979; Verbeek and Nijman, 1992). Regarding the participation decision, we calculate the sample selection correction terms for German natives and ethnic Germans from a simple reduced form probit model. For the different cohorts of first generation immigrants we calculate the selection correction from a bivariate probit model that links the error terms of the decision to participate in the interview and to stay in Germany. To identify the parameter estimates in the selection model we need good and valid exclusion restrictions.

For German natives and ethnic Germans let p_{ij}^* be the true, but unobserved net utility from participating in the interview:

$$p_{ij}^* = L.X_{ij1}\beta_{j1} + L.Z_{ij1}\gamma_{j1} + \epsilon_{ij1}, \tag{5}$$

where j represents these two groups, L is the lag operator, $L.X_{ij1}$ is a matrix of explanatory variables lagged by one time period, β_{j1} is vector of regression coefficients, and ϵ_{ij1} is an error term. The regressor matrix may coincide with all variables in Eq. (1). From here onwards the 1 in the subscript refers to the participation decision. The vector $L.Z_{ij1}$ captures the exclusion restrictions lagged by one time period.

We observe the individual to participate in the interview, $p_{ij} = 1$[6] if the true, underlying net utility from participating is greater than a threshold value, which we normalize to 0:

$$p_{ij} = \begin{cases} 1 & \text{if } p^*_{ij} > 0 \\ \\ 0 & \text{if } p^*_{ij} \leq 0. \end{cases}$$

Assume $\epsilon_{ij1} \sim N(0,1)$ and let $(L.X_{ij1} + L.Z_{ij1})' = M'_{j1}$, $\theta_{j1} = (\beta_{j1}\ \gamma_{j1})'$, then the probability to participate can be expressed as:

$$Pr(p_{ij} = 1) = \Phi(M'_{j1}\theta_{j1}).$$

For German natives and ethnic Germans the inverse Mills ratio (IMR) can directly be estimated from a pooled probit model:

$$\hat{\lambda}^1_{j1} = \frac{\phi(M'_{j1}\hat{\theta}_{j1})}{\Phi(M'_{j1}\hat{\theta}_{j1})}. \tag{6}$$

For the first generation sub-cohorts, we model the decision to participate and to stay in

[6]The codification of this variable is based on the variable 'success of interview', when it takes the value 1. This value represents a successful interview in a particular wave.

Germany jointly. The participation decision of foreign immigrants is analogous to (5):

$$p^*_{ic} = M'_{c1}\theta_{c1} + \epsilon_{ic1}, \tag{7}$$

c representing Cohort 5568, Cohort 6973, Cohort 7487, and Cohort 8802. For the decision to stay in Germany let s^*_{ci} be the true, but unobservable net utility from staying in Germany:

$$s^*_{ic} = M'_{c2}\theta_{c2} + \epsilon_{ic2}, \tag{8}$$

where $(L.X_{ic2} + L.Z_{ic2}) = M'_{c2}$ and $\theta_{c2} = (\beta_{c2}\ \gamma_{c2})'$. From here onwards 2 refers to the decision to stay in Germany. All variables are defined as above except for $L.Z_{ic2}$ being the vector of exclusion restrictions for this process.

We observe a foreigner to stay in Germany $s_{ic} = 1$[7] if net utility from staying in Germany s^*_{ic} is greater than a threshold value, which we normalize to zero:

$$s_{ic} = \begin{cases} 1 & \text{if } s^*_{ic} > 0 \\ 0 & \text{if } s^*_{ic} \leq 0. \end{cases}$$

Assuming $\epsilon_{ic2} \sim N(0,1)$ the probability to stay in Germany can be expressed as

$$Pr(s_{ic} = 1) = \Phi(M_{c2}\theta_{c2}).$$

[7]The proxy for staying in Germany $s_{ic} = 1$ if the variable success of interview $yh3126x \neq 5$. This value represents moving out of Germany. For ethnic Germans we do not have to formalize this decision, because we obtain only four person-year observations for this group in our sample.

We further assume that the error terms of the two decisions are not independent from each other ($\text{cov}(\epsilon_{ic1}\epsilon_{ic2}) = \rho_c \neq 0$). The IMRs for the four different cohorts of first generation immigrants have to be calculated from a bivariate probit model in which we account for partial observability (Poirier, 1980; Vella, 1998). The error terms of (7) and (8) are assumed to be distributed as:

$$\big(\epsilon_{ic1}, \epsilon_{ic2}\big) \sim \text{bivariate normal}\big(0, 0, 1, 1, \rho_c\big).$$

The log-likelihood is then:

$$\log L = \sum_{i=1}^{N} \log \Phi^{bp}(d_{ic1} M_{c1}\theta_{c1}, d_{ic2} M_{c2}\theta_{c2}, d_{ic1}d_{ic2}, \rho_c),$$

where $d_{icl} = 2y_{icl} - 1, l = 1, 2$ and Φ^{bp} is the bivariate normal cumulative distribution function. From this log-likelihood we obtain the bivariate probit Maximum Likelihood estimates $\hat{\theta}_{c1}$ and $\hat{\theta}_{c2}$ that are used to calculate IMRs according to Vella (1998, p. 256) for each cohort c:

$$\hat{\lambda}_{c1} = \sigma_{c1} \cdot \frac{\phi(M_{c1}\hat{\theta}_{c1})\Phi(M'_{c1}(\hat{\theta}_{c2} - \hat{\rho}_c \cdot \hat{\theta}_{c1}))}{\Phi^{bp}(M_{c1}\hat{\theta}_{c1}, M_{c2}\hat{\theta}_{c2}, \hat{\rho}_c)}, \tag{9}$$

and

$$\hat{\lambda}_{c2} = \sigma_{c2} \cdot \frac{\phi(M_{c2}\hat{\theta}_{c2})\Phi(M'_{c2}(\hat{\theta}_{c1} - \hat{\rho}_c \cdot \hat{\theta}_{c2}))}{\Phi^{bp}(M_{c1}\hat{\theta}_{c1}, M_{c2}\hat{\theta}_{c2}, \hat{\rho}_c)}, \tag{10}$$

The selectivity-corrected earnings equation is:

$$\begin{aligned} \ln Y_i &= \alpha + \sum_g D_g \cdot \beta_{g0} + \sum_g D_g \cdot YoR_i \beta_{g1} + \sum_g D_g \cdot {YoR_i}^2 \beta_{g2} + \\ &+ X_i'\theta + W_i'\gamma + H_i'\pi + I_i'\psi + \sum_j \hat{\lambda}_j^{1\prime}\Gamma_j + \sum_c \hat{\lambda}_c^{1\prime}\Gamma_{c1} + \sum_c \hat{\lambda}_c^{2\prime}\Gamma_{c2} + u_i, \quad (11) \end{aligned}$$

where g refers to all groups, j to German natives and ethnic Germans, and c to first generation cohorts, 1 stands for the decision to participate and 2 for the decision to stay. The parameter vectors Γ_j, Γ_{c1} Γ_{c2} represent the influence of the inverse Mills ratios on earnings.

2.3 Exclusion Restrictions

A valid and good exclusion restriction Z has to meet the following two conditions: (i) $cov(L.Z_1, \epsilon_1) = cov(L.Z_2, \epsilon_2) = 0$ and (ii) $cov(L.Z_1, p) \neq 0$ and $cov(L.Z_2, s) \neq 0$. The first assumption requires that the exclusion restriction Z lagged by one time-period must not correlate with the unobservables that determine the current decision to participate in the interview or to stay in Germany. It implies that the exclusion restriction of last period must not correlate with current labour market outcomes. Whether this assumption holds has to be judged by economic reasoning. The second assumption requires that the exclusion restriction correlates with the decision to participate and to stay in Germany. It can be tested by imposing the Null-Hypothesis of $H_0 : \gamma_1 = \gamma_2 = 0$ in Eqs. (5), (7), and (8).

With respect to the participation decision, it is common to use 'change of interviewer

during the first year since panel entry' (Behr, 2004; Rendtel, 1990; Spiess and Pannenberg, 2003; Willis and Hill, 2001). The idea behind this instrument is that interviewees are more likely to continue to participate if the interviewer remains the same over the year. Working through the questionnaire in collaboration with the interviewer is time intensive and to answer authentically requires trust towards the interviewer. If the interviewer changes, an interviewee must build up a new relationship, a requirement which may cause uneasiness. On the other hand, whether the interviewer changes does not influence the labour market performance of the interviewee, since this decision is solely taken by the data collection agency.

With respect to the decision to stay in Germany, it is more complex to find an appropriate exclusion restriction. The literature on return-migration identifies relative deprivation, capital constraints, higher purchasing power in destination country or country-of-origin, or higher rates of return to self-employment as possible explanations for returning home (see e.g. (Dustmann, 2003)). All of these factors are, nevertheless, intimately linked to the labour market position of an immigrant. Constant and Massey (2005) suggest that any variable that represents strong ties or attachment with the country-of-origin is a good predictor for the probability of moving abroad. Information on where relevant family members live, whether the family has children in schooling age, or whether the immigrant came from a war-torn country may proxy these locational preferences. We choose indicators for 'number of children below the age 13', 'spouse or child(ren) away', and 'having left the country of origin due to war or seeking freedom'. The idea behind the exclusion restriction 'number of children below the age 13' is that families who have several children

younger than 13 years of age are more likely to stay in Germany because they do not want them to change the familiar schooling environment. Children who undergo primary and secondary education find themselves in a decisive period for developing intellectual and social skills. The more children of compulsory schooling age a family has, the more likely a family will decide in favour of staying. On the other hand, there is no empirical evidence that the actual number of children aged under 13 years exhibits an independent impact on the labour market position of the father[8]. Furthermore, a father whose child(ren) or spouse are living abroad will be more likely to return to the country where his family lives. Whether or not a part of the family stays abroad is more likely due to the particular immigration regime rather than due to the labour market outcome of the father.

Finally, whether an immigrant returns to his or her country-of-origin depends also on the motivation for migration. Immigrants who left their home countries to escape civil war or oppression of individual liberties are less likely to leave their host country as long as these conditions persist. On the other hand, whether or not such conditions are found in a specific country-of-origin is unlikely to be related to the labour market outcome of the particular immigrant.

The former three instruments are used for the first three foreigner cohorts. In addition to these instruments, the instrument of war in country-of-origin is used for the latest immigrant cohort. Parameter estimates for both decision processes are statistically

[8]There are some arguments in favor of an existing link between the number of children aged younger than 13 and labour market earnings. The more children a family has, the more child benefits it receives. We use, however, gross annual earnings that exclude governmental transfers. On the other hand, the presence of children could motivate a family father to become more ambitious in his career. We found that the number of children in the time period before has no statistical significant association with contemporaneous earnings.

significant and are presented in Tables 8 and 9 in the Appendix.

3 Data

The analysis is based on 21 waves of the German Socio-Economic Panel (GSOEP) from 1984 to 2004. Our sample includes all male persons aged 18 to 60, who live in West Germany, who are not self-employed, and who are currently not in education or vocational training. This yields 86,510 person-year observations. German natives are identified as being born and raised in West Germany and holding a German citizenship. Ethnic Germans are identified as being born outside of Germany, holding a German citizenship, originating from Eastern Europe or Russia, and arriving in Germany after 1987. First generation immigrants are identified as being born outside Germany, entering Germany between 1955 and 2002, and holding a foreign nationality[9]. We further split this group of first generation immigrants into sub-cohorts which are identified along the various immigration regimes described in Bauer et al. (2005, p. 206-211).

We identify first generation immigrants who entered during the guest-worker recruitment period between 1955 and 1973. Since empirically a much larger number of immigrants entered after 1968 than between 1955 and 1967 (see Fig. 1) and since the last guest-worker agreement was signed in 1968, we distinguish between two groups of guest-workers. Those who entered between 1955 and 1968 are labelled Cohort 5568 and those who entered between 1969 and 1973 are labelled Cohort 6973. We opted for this sub-

[9]We disregard those immigrants who obtained the German nationality. More than 1.5 % of our total sample, or roughly 7 % of the foreigner population in the sample, naturalized. Controlling for naturalization has no effect on the estimation results. These can be obtained on request.

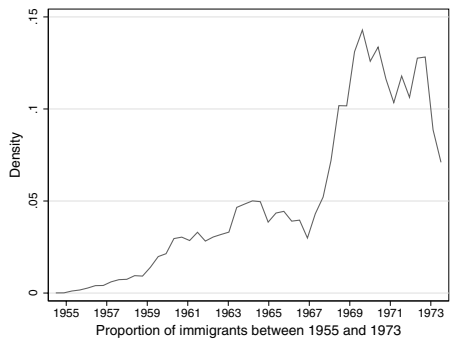


Figure 1: Inflow of immigrants between 1955 and 1973

division of guest-workers to allow for a hypothetical systematic difference between the earlier and the later recruits in terms of risk attitude. The earlier recruits may be interpreted as the pioneers who left their home country without social networks in Germany. The later recruits may have followed due to recommendations from fellow countrymen, who experienced the labour market opportunities, and due to the possibility of falling back on now existing social networks in Germany. Those immigrants who entered during family reunification between 1974 and 1987 are classified as Cohort 7487, and those who entered shortly before the fall of the Iron Curtain are classified as Cohort 8802. In total, we dispose of $9,977$ native Germans, 297 ethnic Germans, and $2,152$ first generation immigrants. For first generation immigrants we are left with 487, 749, 487, and 244 individuals for cohorts 5586, 6973, 7487, and 8802, respectively.

Table 1 presents the unconditional means of key socio-economic characteristics for all groups together with both outcomes, i.e. mean annual current gross labour earnings[10] and

[10]This variable reflects the sum of all monthly salaries before tax deduction. It comprises bonus payments such as holiday bonus, and the so-called 13^{th} and 14^{th} monthly salary. We chose yearly income

unemployment rates (Tables 5 to 7 in the Appendix provide definitions for all variables). To account for the over-sampling of foreigners cross-sectional probability weights provided by the GSOEP are used. Longitudinal weights are not used since we explicitly model panel attrition. The vast majority of the first three foreigner cohorts stems from the classical guest-worker countries (71 to 82 %), whereas this holds for less than 50 % of the latest foreign immigrant cohort. Hence, the nationality mix changed substantially in most recent years. Annual real gross earnings are the largest for native Germans, followed by Cohorts 5568, 6973, and 8802. Ethnic Germans and Cohort 7487 have the lowest earnings. For the former group it may be due to their members shortest duration of stay in Germany. For the latter group it is because its members are the youngest of all groups[11]. These distributional differences are exemplified in Fig. 2 for average earnings greater than zero and smaller than 80,000 Euro p.a..

The latest immigrant cohort is the group, which arrived on average at a much older age (26 years) than the three previous cohorts (21, 22, 17 years, respectively). Cohort 7487 was on average the youngest cohort to arrive in Germany. Nearly 42% of them arrived in Germany at age younger than 15 years. This is probably due to the fact that the main channel of immigration during that time was family reunification. In this group the majority of its members underwent at least partly the German education system.

rather than monthly or hourly wages, since it captures times of unemployment or underemployment and represents the most important income concept in the German economy.

[11] The sample used does not include individuals with excessive real gross earnings for ethnic Germans. There were only six individuals whose real gross earnings exceeded 100,000 Euro p.a.. Except for one individual, all hold a University degree and are older than 37 years of age. We excluded three cases from the German sample. Those were two individuals with less than 12.5 years of education and aged below 23 years, who earned more than 400,000 Euro p.a. and one technocrat aged 30 years who reported to earn more than 500,000 Euro p.a..

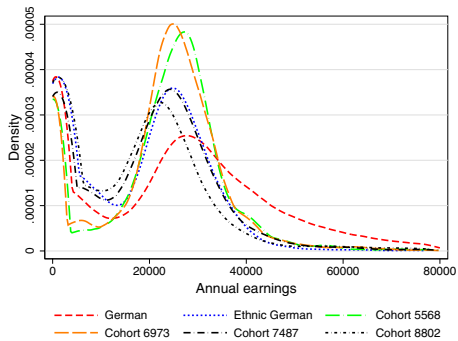


Figure 2: Probability distribution of annual earnings

Whether this makes any difference for their relative labour market performance remains an empirical question, which we address in our analysis. Education indicators suggest that this group is indeed different from earlier cohorts. A much smaller proportion of Cohort 7487 (around 14%) dropped out of school compared to the two oldest cohorts (32 and 24%). Ethnic Germans are relatively well educated, only 5% finished school without a degree and more than 4% hold the highest schooling degree. The youngest cohort of first generation immigrants is the group with the largest proportion of highly educated among foreign immigrants. However, we also observe a considerable share (nearly 10%) of its members without a schooling degree.

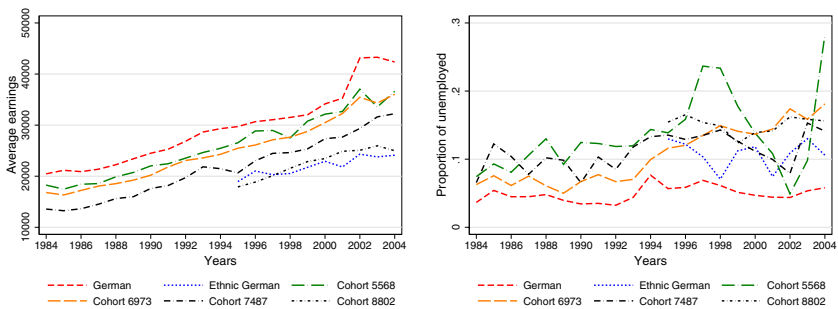
With respect to unemployment compared between 1998 and 2004, (see last column to the right in Table 1 and Fig. 3(b)), Cohorts 5568 and 6973 are the groups with the greatest share of unemployed in the sample. Both groups also face the highest growth of unemployment risk over time. Even though ethnic Germans have a relatively low share of unemployed in 1994, their share has increased equally in 2004. The two youngest first

Table 1: Descriptive statistics

Group:	Age	% from main origin countries[1]	Age at immi-gration	% younger than 15 upon arrival	Highest schooling degree	No schooling degree	Annual gross earnings[2]	% registered unemployed 1998/2004
German	38.9	– –	– –	– –	20.6	2.5	36,313	6.3/6.1
Cohort 5568	48.5	71.8	22.0	18.6	2.2	31.2	27,509	23.4/28.3
Cohort 6973	44.5	81.8	21.1	26.0	2.3	24.8	26,948	14.9/18.1
Cohort 7487	34.0	70.8	17.0	41.9	3.0	14.3	22,701	14.4/14.1
Cohort 8802	34.1	47.8	25.9	7.5	4.8	9.5	24,836	15.2/16.7
Ethnic Germans	36.4	91.9	27.8	15.9	4.4	5.1	24,426	7.6/11.4

[1] For first generation immigrants: Greece, Italy, Spain, Turkey and Yugoslavia. For ethnic Germans: Kazakhstan, Poland, Romania and Russia. [2] Annual gross earnings are averaged for annual incomes greater than 4,800 Euro.

generation cohorts show stable unemployment shares over the years. Figs. 3(a) and 3(b)



(a) Earnings (b) Unemployment

Figure 3: Labour market outcomes over time

display the changes in income and unemployment probabilities over time for all groups. Both annual earnings and unemployment probabilities evolve heterogeneously over time for each sub-group relative to German natives. For instance, while earnings are growing for German natives, they are falling for nearly all foreigner groups (except Cohort 8802) between 1994 and 2004. Thus, we cannot make the assumption that time shocks equally

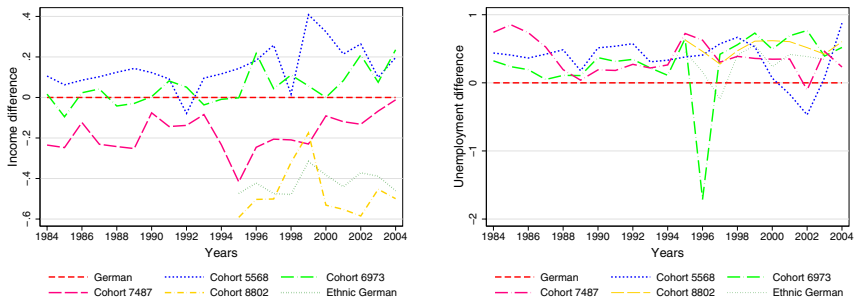
affect foreigners and natives.

Figs. 4(a) and 4(b) display the differences between all foreigner sub-groups and the German benchmark-case (horizontal line)[12]. Income differences over time are small for the first three cohorts (Fig. 4(a)). The youngest immigrant group, Cohort 8802, and ethnic Germans have the largest initial disadvantage, but their earnings increase the fastest over time. Income differences are statistically significant for all five sub-groups relative to native Germans (graph not presented here)[13]. They remain strictly negative for Cohort 7487, Cohort 8802 and ethnic Germans, and mainly positive for the oldest two Cohorts 5568 and 6973. The latter implies that we cannot observe a concave assimilation profile for these two groups in the raw data. With respect to unemployment, all immigrant groups exhibit significantly higher unemployment probabilities than German natives. Additionally, these differences remain relatively constant over time. Only for ethnic Germans and Cohort 8802 we see a slight downward trend over time[14]. Figs. 5(a) to 5(f) show the evolution of the sample size for each group over time by professional training. Profession 1 means no professional training, profession 2 means the individual has acquired an apprenticeship, profession 3 means the individual has acquired a technocratic educations, and profession 4 means the individual has obtained a university degree. Sample sizes change at different degrees for different professional groups and they change differently

[12]This graph is the result of regressing the log of income or a indicator variable for unemployment on a set of dummy variables representing foreigner groups for each year. The parameter estimates of this raw method for each time period is used as data point.

[13]Graphs with confidence intervals are provided upon request.

[14]It is unclear why Cohort 6973 displays a substantial one-period drop in unemployment probabilities in 1996.



(a) Earnings

(b) Unemployment

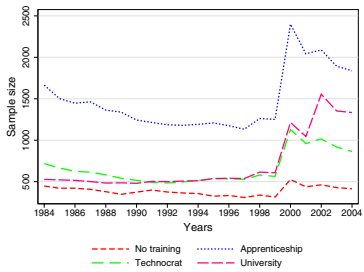
Figure 4: Raw differentials of labour market outcomes over time

for the various sub-groups[15]. For all groups, sample sizes for individuals with a university degree depreciate less strongly than for individuals with no professional training. For ethnic Germans, for instance, from 1999 onwards there are more individuals who hold a university degree in the sample than those who have no professional training, whereas the opposite holds in 1994. Thus, there seems to be evidence for a systematic relationship between human capital endowment and the probability of staying in the sample.

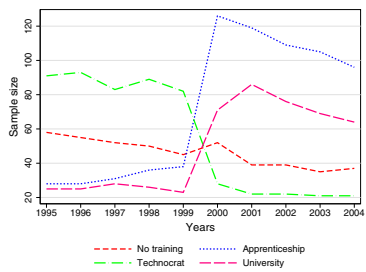
4 Results

This section discusses the results obtained for the earnings, panel attrition, and unemployment equations. We report only marginal effects of interest to our economic hypothesis, i.e. the immigrant sub-group specific intercepts β_{g0}, which represent the initial earnings differential, and the parameter vectors of years of residence β_{g1} and its square β_{g2}. The latter indicate the assimilation profiles of each group. The results of the uni- and bivariate

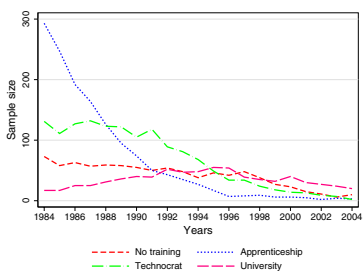
[15]The large hikes in the graphs are caused by the refreshment samples in 1999.



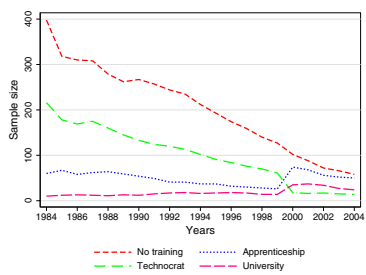
(a) German



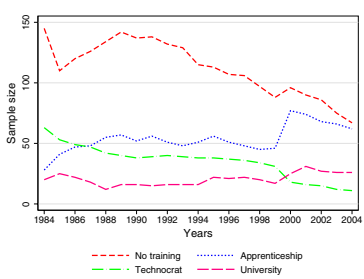
(b) Ethnic German



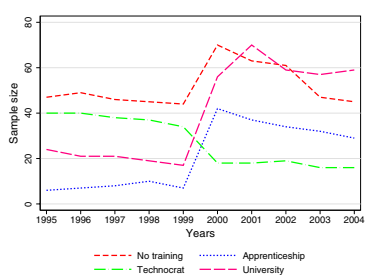
(c) Cohort 5568



(d) Cohort 6973



(e) Cohort 7487



(f) Cohort 8802

Figure 5: Evolution of samples over time by vocational training

probit models, from which we calculate the inverse Mills ratios for the sample selection correction, are provided in Tables 8 and 9 in the Appendix. Full results are provided upon request[16].

4.1 Annual earnings

Estimates for Eq. (1) are presented in Table 2. In Model 1 we regress the logarithm of real gross earnings on the sub-group indicators and the second order polynomial of years of residence. In Model 2 we extend this benchmark case by controlling for socio-demographic factors such as marital status, number of children, disability status, age and its square as well as the whole set of human capital indicators, i.e. type of secondary education and type of vocational training. Model 3 estimates Eq. (11) correcting for panel attrition. These three models are estimated by pooled OLS (POLS). In Model 4 we estimate Eq. (2) to control for time-invariant unobserved heterogeneity. Finally, Model 5 combines Eqs. (2) and (11) assuming that the bias due to systematic drop-out of the sample is time-varying. In the latter two models we can only identify the coefficient of the assimilation profile for each sub-group separately and we cannot compare this profile to German natives. The last two models are therefore a robustness-check for the speed of assimilation.

Estimation results suggest a statistically significant concave earnings assimilation profile for ethnic Germans which is remarkably robust across the five models. Upon entry to Germany they earn between 48 to 64 % less than German natives[17]. However, their

[16]The non-reported coefficients for the human capital indicators yield the expected signs and they are all statistically significant.

[17]In Euro terms that means an ethnic German earns about 16,000 Euros less than a German native annually in Model 1

Table 2: Results annual earnings

	Benchmark Specification POLS	Full Specification POLS	Full Specification Heckman correction	Full Specification Fixed Effects	Full Specification Heckman Correction & FE
	Model 1	Model 2	Model 3	Model 4	Model 5
Cohort 5568	-.397	-.025	.364		
	(.473)	(.486)	(.507)		
Cohort 6973	-.956***	-1.004***	-.116		
	(.214)	(.213)	(.172)		
Cohort 7487	-.761**	-.050	-.040		
	(.340)	(.186)	(.191)		
Cohort 8802	-1.436***	-.667**	-.616**		
	(.285)	(.274)	(.275)		
Ethnic German	-1.043***	-.886***	-.728***		
	(.291)	(.252)	(.240)		
Yrs Res C 5568	.011	-.006	-.024	-.0009	.001
	(.035)	(.036)	(.038)	(.013)	(.013)
Yrs Res C 6973	.063***	.079***	.008	.028***	.016**
	(.019)	(.019)	(.016)	(.008)	(.008)
Yrs Res C 7487	.066*	.022	.020	-.002	-.014**
	(.039)	(.019)	(.019)	(.007)	(.007)
Yrs Res C 8802	.202***	.118**	.102*	.116***	.062***
	(.062)	(.060)	(.059)	(.019)	(.020)
Yrs Res Eth Ger	.092	.152***	.117**	.113***	.063***
	(.057)	(.052)	(.051)	(.024)	(.024)
Yrs Res^2 C 5568	.0002	.0003	.0006	-.00002	-.00003
	(.0006)	(.0006)	(.0007)	(.0002)	(.0002)
Yrs Res^2 C 6973	-.0007*	-.001**	.00004	-.0008***	-.0004***
	(.0004)	(.0004)	(.0004)	(.0002)	(.0002)
Yrs Res^2 C 7487	-.002	-.0007	-.0007	-.0005**	-.00008
	(.001)	(.0006)	(.0005)	(.0002)	(.0002)
Yrs Res^2 C 8802	-.008**	-.005*	-.004	-.005***	-.003**
	(.003)	(.003)	(.003)	(.001)	(.001)
Yrs Res^2 Eth Ger	-.002	-.006**	-.005*	-.005***	-.003**
	(.003)	(.003)	(.003)	(.001)	(.001)
Const.	10.099***	6.277***	6.311***	6.145***	6.221***
	(.012)	(.097)	(.095)	(.042)	(.041)
IMR PAR German			.353***		.266***
			(.014)		(.006)
IMR PAR C 5568			.007		-.015
			(.056)		(.014)
IMR PAR C 6973			.234***		.058***
			(.024)		(.010)
IMR PAR C 7487			.312***		.283***
			(.069)		(.020)
IMR PAR C 8802			.087		.340***
			(.106)		(.040)
IMR PAR Eth Ger			.467***		.392***
			(.077)		(.043)
IMR STAY C 5568			.125		.194***
			(.170)		(.045)
IMR STAY C 6973			-.440***		.132***
			(.100)		(.048)
IMR STAY C 7487			.051		.034
			(.073)		(.029)
IMR STAY C 8802			.536***		.169**
			(.194)		(.076)
Number of obs. $(N \cdot T)$	77879	67095	67095	67095	67095
R^2	.035	.437	.47	.282	.316
F statistic	58.651	173.708	167.796	794.709	689.412

Yrs Res = years of residence, IMR PAR = inverse Mills ratio for the participation decision, IMR STAY = inverse Mills ratio of the return-migration decision. Semi-elasticities for the sub-group dummy variables are calculates as the difference (Δ_j) for each sub-group j vis-à-vis German natives are calculated post-estimation with $\Delta_j = \exp(\beta_{0,j}) - 1$ (Halvorsen and Palmquist, 1980). White robust standard errors are reported in parentheses. Significance levels are reported at 1 %(***), 5 % (**) and 10 % (*)

earnings grow substantially afterwards. In Model 2, for instance, four years of residence bring ethnic Germans a 10 % increase in annual earnings. The quantitative extent of the initial earnings difference and catch-up to comparable natives critically depend on the chosen specification. The coefficient on years of residence decreases continuously from the full specification estimated by POLS to the Model with selectivity correction terms with individual fixed effects. It turns out to be less than half in Model 5 compared to Model 2[18].

The latest foreign-born immigrant sub-group, Cohort 8802 also exhibits a relatively robust and statistically significant concave assimilation profile. Controlling for the full set of education in Model 2 leaves this group with yet an initial earnings difference of nearly 50% to comparable German natives. Their earnings also grow with every additional year of residence, for instance, by 8% for four years of residence Germany. This speed of assimilation is less strong when controlling for selective panel attrition in Model 3 and 5. Even though it reduces initial earnings difference by approximately 10 percentage points when comparing to Model 2, the speed of assimilation declines by more than 10 percent in Model 3 and by 50 percent in Model 5.

Apart from a relative robust assimilation profile, we find that controlling for human capital accumulation explains a large share of initial earnings differences between ethnic Germans, Cohort 8802 and comparable German natives (Comparison Model 1 to Model 2).

[18]We tested whether the steep assimilation profiles of ethnic Germans are driven by individuals with extreme incomes. Excluding both the top 1 % and 2 % income earners does not change the estimation results. These results are provided upon request.

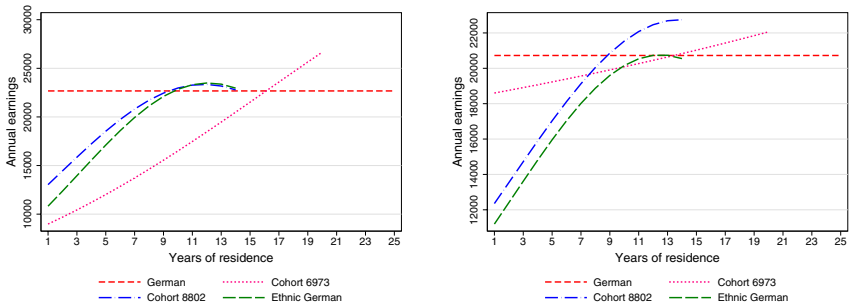
By contrast, we cannot find a similarly robust picture of assimilation for Cohort 6973, i.e. those individuals who immigrated during the last years of guest-worker recruitment. For them we observe a statistically significant concave assimilation profile in the full specification (Model 2), but once controlling for panel attrition (Model 3), the concave earnings profile disappears. Taking into account time-invariant unobserved heterogeneity by individual fixed effects renders the coefficient for years of residence of this group statistically significant again. Controlling for selective panel attrition within the fixed effects framework does not change this result qualitatively, but it decreases the assimilation coefficient by almost 50%. Hence, in our sample the immigrant sub-group Cohort 6973 seems to be highly selected in terms of unobservables.

Both other cohorts, i.e. earlier guest-worker immigrants (Cohort 5568) and immigrants from the family reunification era (Cohort 7487) do not exhibit any systematic assimilation profile. Especially in the case of Cohort 5568 we identify the assimilation profile mainly from individuals who have lived for many years in Germany. Thus, these are individuals who are close to the end of their assimilation process.

Last, the inverse Mills ratios for the participation decision are statistically significant and positive for all groups, except for Cohort 5568 and Cohort 8802 in the POLS specification. This implies that unobservables that positively influence the earnings determination process also have a positive impact on the willingness to participate in the interview. For all these groups income differences vis-à-vis German natives are exaggerated. On the other hand, the underlying links between the decision to stay and labour market outcomes are more ambiguous among the first generation cohorts. Unobservable factors that positively

influence the labour market outcomes of Cohort 8802 also positively influence the decision to stay. Even though Cohort 5568 is also positively selected in terms of unobservables in the model with individual fixed effects (Model 5), no statistical significant selection is found in Model 3. In contrast, unobservables positively affecting the labour market performance of Cohort 6973, negatively affect the decision to stay in Model 3. Our results suggest that the highly able members of Cohort 6973 are more likely to leave Germany. By contrast, in the fixed effects specification of Model 5 the highly able immigrants of Cohort 6973 are more likely to stay. One explanation for the alternating sign could be that the bias due to self-selection is time-varying, and that underlying factors such as personality traits affect the change of the bias over time.

Figs. 6(a) and 6(b) illustrate the differences in assimilation behaviour of ethnic Germans, Cohort 8802 and Cohort 6973 for Model 2 and 3. Whereas the former two groups catch-up with comparable German natives after approximately 9 years, it takes the latter group nearly 17 years. Once we adjust for panel attrition, Cohort 8802 assimilates even faster (about 2 years earlier), whereas ethnic Germans need three years longer and initial earnings differences disappear for Cohort 6973. Earnings growth rates beyond the German native level cannot be easily interpreted as positive self-selection, though. First, we identify the later growth rates from a small number of ethnic Germans and Cohort 8802 who resided longer than ten years in Germany. Second, the German native benchmark income is a lower bound estimate, since we disregard the earnings growth for Germans.



(a) Model 2

(b) Model 3

Figure 6: Simulated assimilation profiles for earnings

4.2 Checks for robustness

Table 3 summarizes the main results of a checks for robustness with respect to the definition of first generation immigrants for Model 2. Model S1 complements Model 2 with age at immigration as an additional regressor. Model S3 excludes all individuals who immigrated to Germany at an age younger than 15. Model S2 excludes all immigrants whose potential labour market experience is smaller than their years of residence in Germany. This ensures that the sample includes only immigrants who did not undergo vocational training in Germany.

Results of the robustness checks for ethnic Germans by and large resemble the estimates of Model 2. This group still exhibits a significantly concave earnings assimilation profile across all three models. Initial earnings differences vary within a range of no difference to around 11 percentage points when compared to Model 2. The quantitative dimension of the years of residence coefficient for ethnic Germans varies between 0.15 and 0.17 and is, thus, only slightly higher than in Model 2.

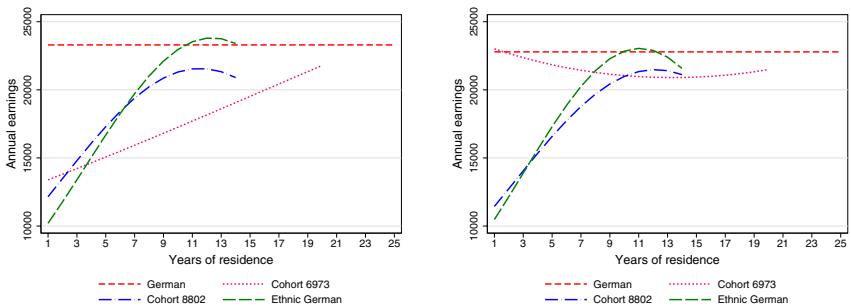
A different picture emerges for Cohort 8802. This group still reveals a significantly concave earnings profile in Model S2, which is the sample excluding all immigrants who were younger than 15 years of age upon entry. Initial earnings differences grow by up to 30 percentage points in Model S2 and Model S3 vis-à-vis Model 2. The magnitude of the difference suggests a strong influence of the second generation on the estimation results. In addition, in Model S3 we observe a linear catch-up process for this group, i.e. an insignificant estimate for the coefficient of the second order polynomial. The linearity may be due to the fact that the sample includes only a small number of individuals who stayed long enough in Germany to observe a decreasing earnings' growth rate. For all other sub-groups the relevant estimates are insignificant and no clear pattern emerges. With respect to the impact of age at entry, our results suggest that those entering at an older age exhibit lower earnings. The most pronounced effect is observed for Cohort 6973, i.e. the second wave of guest-worker recruitment, whose members experience a 2.5 % earnings penalty, all other things equal, for each additional year of age at immigration.

Figs. 7(a) and 7(b) illustrate the differences in assimilation profiles when controlling for the second generation. The rapid catch-up rates for Cohort 8802 are mainly driven by the second generation. This group no longer reaches the same income level as their native German peer group. The assimilation profiles of ethnic Germans are insensitive to the definition of the sample.

Table 3: Results annual earnings, sensitivity analysis

	Controlling for age at entry	Without ind. younger than 15 at entry	Only individuals with no education in Germany
	Model S1	Model S2	Model S3
Cohort 5568	.054	.199	.264
	(.482)	(.266)	(.279)
Cohort 6973	.126	.043	.026
	(.191)	(.189)	(.196)
Cohort 7487	.140	-.115	-.075
	(.151)	(.184)	(.198)
Cohort 8802	-.517	-.825***	-.807***
	(.336)	(.288)	(.288)
Ethnic German	-.877***	-.930***	-.941***
	(.302)	(.250)	(.253)
Yrs Res C 5568	-.002	-.033*	-.038*
	(.036)	(.018)	(.020)
Yrs Res C 6973	.034*	-.017	-.017
	(.018)	(.018)	(.019)
Yrs Res C 7487	.016	.022	.004
	(.017)	(.020)	(.021)
Yrs Res C 8802	.124**	.143**	.123**
	(.060)	(.063)	(.062)
Yrs Res Eth Ger	.151***	.166***	.172***
	(.054)	(.053)	(.053)
Yrs Res^2 C 5568	.0002	.0009***	.0009***
	(.0006)	(.0003)	(.0003)
Yrs Res^2 C 6973	-.0005	.0006	.0006
	(.0004)	(.0004)	(.0004)
Yrs Res^2 C 7487	-.0007	-.0007	.00004
	(.0005)	(.0006)	(.0007)
Yrs Res^2 C 8802	-.005*	-.006**	-.005
	(.003)	(.003)	(.003)
Yrs Res^2 Eth Ger	-.006**	-.007***	-.008***
	(.003)	(.003)	(.003)
Age Entry C 5568	-.008**		
	(.004)		
Age Entry C 6973	-.026***		
	(.003)		
Age Entry C 7487	-.008*		
	(.005)		
Age Entry C 8802	-.010		
	(.007)		
Age Entry Eth GER	-.002		
	(.004)		
Const.	6.332***	6.433***	6.408***
	(.098)	(.100)	(.100)
Obs. Germans (N)	8091	8091	8091
Obs. Cohort 5568 (N)	487	404	395
Obs. Cohort 6973 (N)	749	575	555
Obs. Cohort 7487 (N)	487	281	235
Obs. Cohort 8802 (N)	244	224	215
Obs. Ethnic Germans (N)	296	235	215
R^2	.441	.430	.431
F statistic	160.039	154.174	152.796

Yrs Res = years of residence, Age entry = age at which individual arrived in Germany, Obs. = Number of individuals (N). White robust standard errors are reported in parentheses. Significance levels are reported at 1 %(***), 5 % (**) and 10 % (*)



(a) Model S2

(b) Model S3

Figure 7: Simulated assimilation profiles excluding second generation

4.3 Unemployment probabilities

Table 4 summarizes the estimation results of the probability to be registered unemployed. Model U1 includes sub-group indicators and second order polynomial of years of residence only. Model U2 estimates Eq. (4), which includes the full set of human capital variables. Model U3 takes into account time-invariant unobserved heterogeneity by estimating a conditional fixed effects logit model. This model uses only a sample of those individuals who change at least once between being employed and unemployed. In Models US1 to US3 we control for second generation immigrants by dropping all immigrants from the sample who arrived in Germany at an age younger than 15 or who underwent at least partially the German education system. The table reports marginal effects[19].

Our results suggest that ethnic Germans are the only group with a robust and statistically significant convex unemployment profile across all specifications. Independent of

[19]Marginal effects are evaluated at the sample mean of each regressor for the pooled probit. For the conditional fixed effects logit model we calculate the marginal effect by setting the individual fixed effect equal to zero. See Jones and Schurer (2007) for a discussion on the appropriateness of this choice.

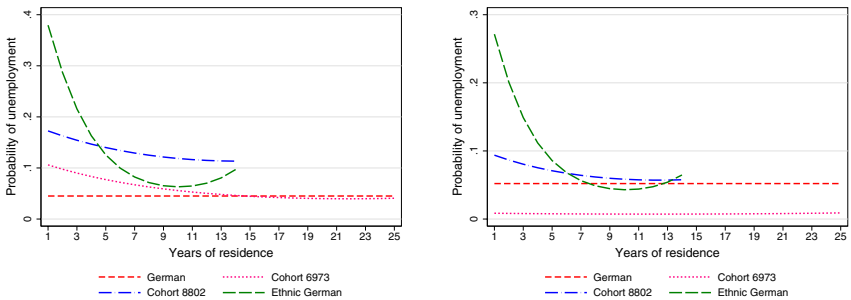
controlling for education (Model U1 versus U2), ethnic Germans face up to a 33% higher risk of unemployment than comparable German natives. This risk decreases over each year of residence in Germany and is most pronounced in the conditional fixed effects logit. In contrast, Cohort 8802 experiences a smaller risk of 8 to 12%, but these unemployment probabilities do not significantly decrease over time. Finally, the conditional fixed effects logit yields a significant convex profile for Cohort 6973 which does not exist in any other specification. Again, this finding indicates that this sub-group is highly selected in terms of unobservables.

Results for Models US2 and US3 suggest that the relatively low initial differences in unemployment risk for Cohort 8802 are driven by second generation immigrants. Dropping them from the sample doubles unemployment probabilities upon arrival, vis-à-vis Model U2 up to 16%. Especially those immigrants, who arrived after 1987 and did not attend the German education or training system are particularly vulnerable to become unemployed. Similarly, but less extreme, are the initial differences in unemployment risk driven by second generation immigrants for ethnic Germans. Their speed of assimilation also doubles when comparing Model U2 and Models US2 and US3. Figs. 8(a) and 8(b) display the assimilation behaviour as predicted in Model U2 and US2. Only the assimilation profile for ethnic Germans is statistically significant. According to Model U2 this group would not catch-up with German natives. Excluding second generation immigrants, ethnic Germans reach the same risk of unemployment as German natives after 7 years. By contrast, Cohort 8802 never fully reaches the same unemployment risk as comparable German natives, but comes closer if the second generation is excluded from the sample.

Table 4: Results unemployment probabilities

	Benchmark Specific.	Full Specific.	Full Specific. Fixed-Effects	Control for Age at Entry & Resid	No ind. younger than 15 at entry	Only ind. with no edu. in Ger
	Model U1	Model U2	Model U3	Model US1	Model US2	Model US3
Cohort 5568	0.0454	0.1504		0.1451	0.2204	0.3528
	(0.1899)	(0.3344)		(0.3275)	(0.5178)	(0.6271)
Cohort 6973	0.9926***	0.0312		-0.0241	-0.0479	-0.0463
	(0.0239)	(0.0600)		(0.0230)	(0.0111)	(0.0134)
Cohort 7487	0.0791	0.1164		0.0624	0.1935	0.2107
	(0.1162)	(0.1816)		(0.1042)	(0.2837)	(0.3067)
Cohort 8802	0.1202**	0.0842**		0.0271	0.1635**	0.1613**
	(0.0755)	(0.0687)		(0.0453)	(0.1095)	(0.1099)
Ethnic German	0.3464***	0.3301***		0.2304***	0.3839***	0.4010***
	(0.1379)	(0.1586)		(0.1703)	(0.1713)	(0.1761)
YrsRes C5568	-0.0002	-0.0031	-0.0049	-0.0038	-0.0072	-0.0096
	(0.0072)	(0.0048)	(0.0068)	(0.0042)	(0.0117)	(0.0122)
YrsRes C6973	-0.0407***	-0.0025	-0.0106*	-0.0012	0.0083	0.0076
	(0.0099)	(0.0035)	(0.0059)	(0.0030)	(0.0073)	(0.0073)
YrsRes C7487	-0.0031	-0.0046	0.0027	-0.0035	-0.0088	-0.0086
	(0.0058)	(0.0045)	(0.0035)	(0.0037)	(0.0101)	(0.0105)
YrsRes C8802	-0.0036	-0.0021	-0.0038	-0.0019	-0.0046	-0.0027
	(0.0065)	(0.0047)	(0.0072)	(0.0040)	(0.0097)	(0.0098)
YrsRes Eth Ger	-0.0193***	-0.0149***	-0.0262**	-0.0128***	-0.0238**	-0.0250**
	(0.0074)	(0.0051)	(0.0136)	(0.0047)	(0.0100)	(0.0104)
$YrsRes^2$ C5568	0.0000	0.0000	0.0002	0.0001	0.0001	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
$YrsRes^2$ C6973	0.0008**	0.0001	0.0003*	0.0000	-0.0001	-0.0001
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
$YrsRes^2$ C7487	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)
$YrsRes^2$ C8802	0.0002	0.0001	-0.0002	0.0001	0.0002	0.0000
	(0.0004)	(0.0003)	(0.0004)	(0.0002)	(0.0005)	(0.0005)
$YrsRes^2$ Eth Ger	0.0009*	0.0007***	0.0014**	0.0006***	0.0011**	0.0012**
	(0.0004)	(0.0003)	(0.0007)	(0.0002)	(0.0005)	(0.0005)
Age entry C5568				0.0006		
				(0.0004)		
Age entry C6973				0.0016***		
				(0.0003)		
Age entry C7487				0.0004		
				(0.0004)		
Age entry C8802				0.0007**		
				(0.0004)		
Age entry Eth Ger				0.0003		
				(0.0003)		
N	85227	83412	21818	82459	78446	77379
χ^2	140.41**	673.54**	844.79**	778.55**	639.39**	635.19**

This table reports marginal effects evaluated at the sample mean of each variable. The marginal effect of the conditional fixed effects logit are evaluated at the sample mean and setting the individual fixed effect equal to zero. White robust standard errors are reported in parentheses. Significance levels are reported at 1 %(***), 5 % (**) and 10 % (*). 'Yrs Res' = years of residence, Age Entry = age at entry when entered Germany, N = Number of observations.



(a) Model U2

(b) Model US2

Figure 8: Simulated assimilation profiles for unemployment

5 Conclusions

This paper investigates labour market outcomes in terms of earnings and unemployment probabilities of immigrants relative to comparable German natives. Rich and high quality data of the German Socio-Economic Panel are utilized to test for heterogeneous assimilation profiles across four groups of first generation immigrants and ethnic Germans. We control for the possibility of differences in unobserved productivity or human capital investments that determine the shape of the assimilation path between groups. Further, we test whether the assimilation coefficient within groups is driven by unobserved time-invariant heterogeneity or by a sample selection process induced by panel attrition. Systematic exit from the sample is corrected in a two-step sample selection correction that models jointly the decision to participate in the interview and the decision to stay in Germany (Heckman, 1979).

We find heterogeneity in the assimilation profiles of five immigrant groups. With respect to annual earnings, ethnic Germans and the youngest group of foreign immigrants,

who arrived between 1988 and 2002, exhibit similar statistically significant concave assimilation profiles. Both groups suffer an initial disadvantage vis-à-vis comparable German natives, whereas their earnings grow at a decreasing rate over time. The estimated catch-up rates of both groups of approximately ten years are in-line with findings for US data (Chiswick, 1978; Carliner, 1980). For the foreigner group which arrived between 1969 and 1973, we find a flatter assimilation profile. Catch-up for this group occurs after 16 years, an estimate which resembles the results of Schmidt (1993) and Constant and Massey (2005). We cannot confirm the assimilation hypothesis for immigrants who arrived between 1955 and 1968 and between 1974 and 1987. Our estimates show neither statistically significant initial differences nor earnings growth rates in comparison to German natives. This might be due to the fact that we do not observe earnings differences upon entry from 1955 onwards for these cohorts, but rather upon sample entry since 1984. Thus, assimilation profiles are mainly identified with data points collected late along the assimilation path for Cohort 5568.

Our results further suggest that omitted variable and attrition bias play a quantitative role on these outcomes, but do not change their nature except for Cohort 6973. Unobserved time-invariant heterogeneity biases the assimilation coefficient upwards. Nevertheless, controlling for this bias with fixed effects estimation still yields statistically significant coefficients on earnings growth. Regarding selective panel attrition, we find that for most foreigner sub-groups and German natives alike unobservable factors that affect earnings positively, also impinge positively upon the decision to participate in the interview. Hence, individuals who perform relatively well in the labour market are also more

likely to stay in the sample. This result on foreigners is in line with results provided by Rendtel (1995) for the general population. Controlling for attrition bias leaves earnings differences of ethnic Germans and Cohort 8802 vis-à-vis German natives less pronounced and assimilation profiles flatten out, even though the estimates are still significant. Only for Cohort 6973 systematic drop out from the sample seems to drive assimilation profiles. Taken together, our results correspond with the empirical literature on panel attrition (e.g. Behr (2004) or Behr et al. (2003)) suggesting that labour market related attrition is present, but does not necessarily alter conclusions.

The picture for unemployment probabilities is similarly heterogeneous. Ethnic Germans are the only immigrant group which exhibits a statistically significant convex assimilation profile. A member of Cohort 8802 faces a slightly smaller risk to be unemployed upon arrival than an ethnic German. However, this risk does not decrease over time. In contrast to earnings dynamics, unobserved heterogeneity introduces a downward bias into the speed of assimilation for ethnic Germans.

Controlling for the second generation changes results selectively. With respect to earnings, excluding the second generation from the sample has no impact on the catch-up behaviour of ethnic Germans. In contrast, without the second generation, Cohort 8802 no longer reaches the earnings levels of German natives. This suggests that those migrants who arrived in Germany before the age of 14 and who are employed perform relatively well. For unemployment probabilities a mirror image emerges for ethnic Germans. Disregarding the second generation, ethnic Germans reach similar unemployment probabilities as comparable German natives. This suggests that individuals who arrived before the age

of 14 in Germany have a higher probability to become unemployed than immigrants who arrived later. A similar conclusion can be drawn for Cohort 8802.

Overall, we conclude that both observable and unobservable heterogeneity plays a significant role in assessing labour market outcomes of individuals with different cultural backgrounds. A separate analysis of labour market outcomes of the second generation and Turkish immigrants, the strongest immigrant group, could be of interest to complete the picture of heterogeneous assimilation behaviour.

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Table 5: Description of variables

Variable Name	Description
Assimilation Variables	
Ethnic German	Intercept Dummy which takes the value 1 if the individual belongs to the group of ethnic Germans and 0 otherwise
Cohort 5568	Intercept dummy which takes the value 1 if the individual belongs to the group of First Generation Immigrant, Cohort 5568 and 0 otherwise
Cohort 6973	Intercept dummy which takes the value 1 if the individual belongs to the group of first generation immigrant, Cohort 6973 and 0 otherwise
Cohort 7487	Intercept dummy which takes the value 1 if the individual belongs to the group of first generation immigrant, Cohort 7487 and 0 otherwise
Cohort 8802	Intercept dummy which takes the value 1 if the individual belongs to the group of first generation immigrant, Cohort 8802 and 0 otherwise
Yrsres	Years of residence calculated as the difference between the year in time period t and the year of immigration
Yrsres Eth Ger	Interaction term of rears of residence and dummy ethnic German
Yrsres Cohort 5568	Interaction term of rears of residence and dummy Cohort 5568
Yrsres Cohort 6973	Interaction term of rears of residence and dummy Cohort 6973
Yrsres Cohort 7487	Interaction term of rears of residence and dummy Cohort 7487
Yrsres Cohort 8802	Interaction term of rears of residence and dummy Cohort 8802
$Yrsres^2$	The Square of Years of Residence calculated as the square of the difference between the year of current time period t and the year of immigration
$Yrsres^2$ Eth Ger	Interaction term of Years of Residence Squared and Dummy Ethnic German
$Yrsres^2$ Cohort 5568	Interaction term of Years of Residence Squared and Dummy Cohort 5568
$Yrsres^2$ Cohort 6973	Interaction term of Years of Residence Squared and Dummy Cohort 6973
$Yrsres^2$ Cohort 7487	Interaction term of Years of Residence Squared and Dummy Cohort 7487
$Yrsres^2$ Cohort 8802	Interaction term of Years of Residence Squared and Dummy Cohort 8802
Set of Education Dummies	
Dropout	Dummy which takes the value 1 if the individual dropped out of high school and 0 otherwise
Secondary	Dummy which takes the value 1 if the individual passed compulsory schooling of nine years of high school (Hauptschule) and 0 otherwise
Intermediary	Dummy which takes the value 1 if the individual received ten years of high school (Realschule) and 0 otherwise
Upper	Dummy which takes the value 1 if the individual received thirteen years of high school (Gymnasium) and 0 otherwise

Table 6: Description of Variables, continued

Variable Name	**Description**
Set of Professional Education Dummies	
No training	Dummy which takes the value 1 if the individual did not acquire any professional training, 0 otherwise
Training	Dummy which takes the value 1 if the individual finished an apprenticeship or vocational school of any profession (Lehre) , 0 otherwise
Technocrat	Dummy which takes the value 1 if the individual obtained a degree of a health care, technical or civil service training (Fachhochschule) , 0 otherwise
Uniedu	Dummy which takes the value 1 if the individual received a degree from a technical college or a university , 0 otherwise
Othschool	Dummy which takes the value 1 if the individual received any other education which is left unspecified , 0 otherwise
Socio-Demographic Charact.	
Age	Continuous variable that measures the current age of an individual
Age^2	Continuous variable that measures the square of age
Mar1	Dummy which takes the value 1 if the individual is married , 0 otherwise
Mar2	Dummy which takes the value 1 if the individual is married but lives separated from the partner , 0 otherwise
Mar3	Dummy which takes the value 1 if the individual is single , 0 otherwise
Mar4	Dummy which takes the value 1 if the individual is divorced , 0 otherwise
Mar5	Dummy which takes the value 1 if the individual is widowed , 0 otherwise
Disable	Dummy which takes the value 1 if the individual is registered as being disabled of any degree , 0 otherwise
Pershh	Number of persons living in the household
Working Life Charact.	
Workhrs	Continuous variable that measures the average weekly hours spent at work
Ten	Continuous variable that measures the number of years an individual spent at the firm currently working

Table 7: Description of Variables, continued

Variable Name	**Description**
Regional Charact.	
Berlinw	Dummy which takes the value 1 if the individual lives in the Western part of the city state of Berlin , 0 otherwise
Schlhol	Dummy which takes the value 1 if the individual lives in the state of Schleswig-Holstein , 0 otherwise
Hamburg	Dummy which takes the value 1 if the individual lives in the city state of Hamburg , 0 otherwise
Lowsax	Dummy which takes the value 1 if the individual lives in the state of Lower Saxony , 0 otherwise
Bremen	Dummy which takes the value 1 if the individual lives in the city state of Bremen , 0 otherwise
Nrw	Dummy which takes the value 1 if the individual lives in the state of North Rhine Westphalia , 0 otherwise
Hesse	Dummy which takes the value 1 if the individual lives in the state of Hessia , 0 otherwise
Rhine	Dummy which takes the value 1 if the individual lives in the state of Rhineland-Palatinate or Saarland , 0 otherwise
Wurttem	Dummy which takes the value 1 if the individual lives in the state of Baden-Württemberg , 0 otherwise
Bavaria	Dummy which takes the value 1 if the individual lives in the state of Bavaria , 0 otherwise
IV Participation Decision	
Change	Change of Interviewer: This variable takes the value 1 if the interviewer changed for the individual after the first interview
IV Non-Return Migration Decision	
Child13	Number of children in household which are younger than 13 years of age
Child Away	Dummy variable that takes the value 1 if the individual's children are living in home country
Spouse Away	Dummy variable that takes the value 1 if the individual's spouse lives abroad
War/Freedom	Dummy variable that takes the value 1 if the individual's motivation to migrate to Germany was either to escape war or to search for political freedom

Table 8: Results of reduced form probit for decision to stay

	Cohort 5568	Cohort 6973	Cohort 7487	Cohort 8802
	(1)	(2)	(3)	(4)
No. child. < 13 (IV)	.246***			
	(.063)			
Child away (IV)		.548***		
		(.180)		
Spouse away (IV)			-1.029**	
			(.440)	
War or freedom (IV)				.450*
				(.271)
Age	.359***	.088**	-.061	-.083
	(.047)	(.035)	(.043)	(.071)
Age^2	-.004***	-.001***	.001*	.001
	(.0005)	(.0004)	(.0006)	(.0009)
Workhrs per week	.006	.003	-.009	-.014*
	(.004)	(.005)	(.007)	(.008)
Tenure in firm (Yrs.)	.019***	.015**	.023***	-.063**
	(.005)	(.006)	(.009)	(.030)
Intermediate (10 Yrs.)	.842**	-.053	4.909***	4.934***
	(.338)	(.238)	(.166)	(.178)
Technical (10 to 12 Yrs.)		4.799***	-1.227***	
		(.221)	(.297)	
Upper (13 Yrs.)	.031	4.667***	.101	-1.517***
	(.388)	(.213)	(.261)	(.377)
Other	-.792***	-.868***	-.975***	-.565***
	(.148)	(.199)	(.124)	(.213)
Dropout	-1.046***	-.729***	-1.120***	-1.161***
	(.167)	(.203)	(.161)	(.373)
University degree	-.263	-.398	.132	-.201
	(.271)	(.257)	(.215)	(.280)
No prof. training	-.546***	-1.020***	.521***	-.155
	(.142)	(.211)	(.150)	(.281)
Technocrat raining	-.474***	-.977***	.420***	-.595**
	(.154)	(.216)	(.138)	(.267)
Separated	1.072***	-.420	-.453	6.321***
	(.287)	(.370)	(.336)	(.255)
Single	.430***	-.138	.631***	-.324
	(.157)	(.206)	(.133)	(.264)
Divorced	.959***	-.045	1.198***	6.671***
	(.225)	(.223)	(.231)	(.403)
Person in HH (No.)	.036	.119***	.211***	-.035
	(.039)	(.037)	(.036)	(.061)
Const.	-6.134***	1.137	2.210***	4.174***
	(1.060)	(.871)	(.837)	(1.304)
Obs. (N*T)	2869	5304	3007	855

This table reports coefficients of a binary probit model that regresses the observation of not moving out of Germany on a set of regressors and instrumental variables (IV). Instruments used are the number of children below the age of 13 (No. child. < 13), Child away, Spouse away, and war or freedom Significance levels are reported at 1 %(***), 5 % (**) and 10 % (*). 'Yrs Res' = years of residence, Age Entry = age at entry when entered Germany, N = Number of observations.

Table 9: Results of reduced form probit for decision to participate

	GER	ETH GER	C 5568	C 6973	C 7487	C 8802
	(1)	(2)	(3)	(4)	(5)	(6)
Change of nterviewer (IV)	-.412***	-.554***	-.550***	-.487***	-.838***	-.541***
	(.020)	(.215)	(.117)	(.087)	(.108)	(.184)
Age	-.002	-.057	-.023	.234***	-.033	.068
	(.006)	(.043)	(.054)	(.045)	(.034)	(.054)
Age^2	.0001*	.0006	.0007	-.002***	.0006	-.0006
	(.00007)	(.0005)	(.0006)	(.0005)	(.0005)	(.0007)
Workhrs per week	-.003***	-.005	-.012***	.023***	.008	-.001
	(.0009)	(.007)	(.005)	(.004)	(.005)	(.006)
Tenure in firm (Yrs.)	.003**	.024	.015***	.009*	.011	.010
	(.001)	(.016)	(.005)	(.005)	(.009)	(.021)
Intermediate (10 Yrs.)	.009	.230	-3.123***	1.296***	.114	-.026
	(.021)	(.165)	(.301)	(.309)	(.156)	(.349)
Technical (10 to 12 Yrs.)	.074**	-.380				
	(.037)	(.346)				
Upper (13 Yrs.)	.160***	-.278	-.691*	.664***	.747***	-.139
	(.032)	(.232)	(.353)	(.254)	(.205)	(.385)
Other	.017	.391***	-.169	.583***	-.083	-.234
	(.093)	(.134)	(.189)	(.166)	(.104)	(.241)
Dropout	.122*	.639	.384**	.534***	-.355***	-.010
	(.069)	(.501)	(.184)	(.166)	(.125)	(.324)
University degree	-.164***	.356**	-.802**	.038	-.556***	-.319
	(.032)	(.164)	(.322)	(.194)	(.176)	(.246)
No prof. training	-.099***	-.018	-.769***	.339**	-.049	-.315
	(.030)	(.145)	(.178)	(.154)	(.100)	(.220)
Technocrat Training	-.069***	-.019	-.557***	.328**	.064	.006
	(.021)	(.131)	(.192)	(.155)	(.147)	(.236)
Separated	-.117	-.930*	.781**	-.104	-.008	-1.413***
	(.073)	(.490)	(.356)	(.244)	(.325)	(.413)
Single	-.091***	-.047	1.409***	2.103***	-.050	-.653***
	(.025)	(.176)	(.190)	(.243)	(.115)	(.223)
Divorced	-.144***	-1.260***	.273	1.109***	-.184	-.982***
	(.037)	(.310)	(.182)	(.220)	(.177)	(.284)
Person in HH (No.)	.040***	.026	.136***	.267***	.112***	.192***
	(.007)	(.025)	(.030)	(.030)	(.021)	(.051)
Const.	-.051	1.362	-.331	-9.680***	-.298	-1.227
	(.126)	(.835)	(1.200)	(1.192)	(.625)	(1.004)
Obs. (N*T)	44864	1162	2869	5265	2942	855

This table reports coefficients of a binary probit model that regresses the observation of participating in the interview on a set of regressors and instrumental variables (IV) lagged by one time period. Instrument used is the change of interviewer after the first year participating. GER = German, ETH GER = ethnic German, C 5568 = Cohort 5568, C 6973 = Cohort 6973, and so on. Significance levels are reported at 1 %(***), 5 % (**) and 10 % (*). 'Yrs Res' = years of residence, Age Entry = age at entry when entered Germany, N = Number of observations.