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## Employment effects of language training for unemployed immigrants

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Articles on labour market issues

## Employment effects of language training for unemployed immigrants

Julia Lang

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# Employment effects of language training for unemployed immigrants

Julia Lang (IAB)

Mit der Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

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## Abstract

Proficiency in the host country's language is an important factor for a successful labor market integration of immigrants. In this study we analyze the effects of a language training program for professional purposes on the employment opportunities of the participants. We apply an instrumental variable approach and exploit differences in the local training intensities to deal with the problem of unobserved language skills in the data. Our results show that not taking into account endogeneity of language training leads to an underestimation of the effects. Bivariate probit estimates show that language training increases the employment probability of individuals with migration background who participated in 2014 by approximately seven percentage points two years after program start.

## Zusammenfassung

Das Beherrschen der Sprache des Ziellandes ist eine wichtige Voraussetzung für die (Arbeitsmarkt-)Integration von Migranten. In dieser Studie wird untersucht, inwieweit die Teilnahme an einem Sprachkurs die Arbeitsmarktchancen von Personen mit Migrationshintergrund verbessern kann. Das hier untersuchte vom Bundesamt für Migration und Flüchtlinge (BAMF) angebotene und durch den Europäischen Sozialfonds (ESF) geförderte ESF-BAMF Sprachprogramm zur berufsbezogenen Sprachförderung richtet sich an Personen, deren Deutschkenntnisse nicht ausreichend sind, um auf dem Arbeitsmarkt Fuß zu fassen. Die Wirkung des Programms wird für Teilnehmende im Jahr 2014 mit Prozessdaten untersucht. Da in den Daten keine Angaben zu den Sprachkenntnissen der Personen enthalten sind, die sowohl die Teilnahme-wahrscheinlichkeit als auch die Beschäftigungswahrscheinlichkeit beeinflussen, wird ein Instrumentvariablenansatz genutzt. Die Ergebnisse zeigen, dass die Teilnahme am ESF-BAMF Sprachprogramm die Beschäftigungswahrscheinlichkeit der Teilnehmenden mittelfristig (zwei Jahre nach Beginn des Kurses) um bis zu sieben Prozentpunkte erhöht.

**JEL-Klassifikation:** C26, J24, J61, J68

**Keywords:** Language training, migration, integration, employment

# 1 Introduction

The social and economic integration of immigrants is a major challenge for migration policies. With regard to labor market performance, immigrants lack behind native-born in most OECD countries (Organisation for Economic Co-operation and Development, OECD 2016). A crucial factor for the career success of immigrants is the acquisition of language skills of the destination country's language. Language proficiency is necessary to obtain information about jobs and to be able to apply for a job. Moreover, many jobs-especially skilled jobs-require language skills in the host country's language to communicate with supervisors, peers, costumers and business partners. Immigrants who speak the local language will be more likely to find a job and be more productive on the job (Chiswick and Miller 2014).

There is a large number of studies showing that language skills are important for immigrants' labor market success. Chiswick and Miller (2014) give a comprehensive overview over research findings from different countries. Most studies analyze the effects of language proficiency on earnings and show that it has a positive impact on this labor market outcome. For English as the destination country's language there is evidence for the US (e.g., Bleakly and Chin 2004), for Australia (e.g., Chiswick and Miller 1995), for the UK (e.g., Miranda and Zhu 2013) and for Canada (e.g., Ferrer, Green and Riddell 2006 who consider literacy in both English and French). There is also evidence for other languages like Spanish and Catalan in Spain (Budría and Swedberg 2012, Di Paolo and Raymond 2012) or Hebrew in Israel (Chiswick 1998). For Germany, Dustmann (1994) and Dustmann and van Soest (2001, 2002) also find a significant earnings premium to German proficiency. Where the majority of the studies consider earnings as dependent variable, Dustmann and Fabbri (2003) additionally analyze the effects of language skills of immigrants in the UK on their employment probability and find that those who are proficient in English have a higher employment probability of up to approximately 20 percentage points. Yao and van Ours (2015) study the effects of language skills of immigrants in the Netherlands and, besides wages, also estimate the impact on the employment probability and on hours of work. They find that Dutch language problems negatively affect female immigrants' wages but have no significant impact on the other outcomes or for male immigrants.

Given that the vast majority of studies find positive effects of language proficiency on the labor market success of immigrants, formal language training could be a helpful measure to accelerate the integration process into the host country's labor market. In contrast to the extensive literature on language skills of migrants and the clear evidence for positive labor market effects, there is only scarce evidence on the role of formal language training, and the results are mixed. Hayfron (2001) analyzes the impact of language training for immigrants from Pakistan, Chile and Morocco in Norway. He finds that participation in language training improves language skills but has no effect on earnings. He argues that the absence of an earnings effect may be explained by language proficiency being important for immigrants to find a job, but once they have one, their earnings are not necessarily determined by their Norwegian language

skills. Clausen et al. (2009) use Danish data on different active labor market programs and language courses for newly-arrived immigrants and show that improved language proficiency of language course participants have a positive impact on the hazard rate to employment. Sarvimäki and Hämäläinen (2016) examine a policy reform that introduced integration plans for unemployed immigrants in Finland which had a large positive impact on earnings. The integration plans changed the mix of labour market programs to which immigrants were assigned. They spent more time in language courses and other training specifically designed for immigrants. Lochmann, Rapoport and Speciale (2018) show that a very basic language training in France increases labor force participation of immigrants but has no impact on employment and even no effect on language proficiency.

One reason for the absence of positive effects of language training on employment (or earnings) in some studies could be that some of the courses are on a very basic level (Lochmann et al. 2018). Moreover, many previous integration measures like language courses have not particularly been aligned with the needs of the labor market (OECD 2017). One exception is the language program we evaluate. We add to the literature by analyzing a unique language training program with a strong focus on employment-related topics. Teaching language skills that are relevant for the labor market could make this specific language program especially effective.

There are two studies which also consider the language training for professional purposes, which we analyze. Brücker et al. (2016) show that, for the group of refugees in Germany, there is a positive correlation between different language training programs and the employment probability, where this correlation is the strongest for language training for professional purposes. However, they cannot identify causal effects. Walter et al. (2014) analyze the same German language training for professional purposes for participants in 2011 applying a matching approach. As the language skills of immigrants are not observed in the data-which is also the case for our study-, they argue that using a wide range of observable characteristics (including detailed information on the labor market history) should also capture differences in language proficiency of participants and non-participants. They find no effect on the employment chances of participants up to 18 months after the start of the program. However, if language skills are not fully reflected by the observable variables, the estimated effects will be biased.

In our analysis we address the problem of unobserved language proficiency in a different way. We apply an instrumental variable approach to deal with the problem of unobserved heterogeneity, especially unobserved differences in language skills. There are several studies which exploit the regional variation in policy styles of employment agencies and partly use an instrumental variable approach to analyze the effects of several labor market programs (Frölich and Lechner 2010, Lechner, Wunsch and Scioch 2013, Markussen and Røed 2014, Boockmann, Thomsen and Walter 2014, Dean et al. 2015, Caliendo, Künn and Mahlstedt 2017, Eppel 2017, Dauth 2017). The underlying idea of this approach is that the local decision makers have

broad discretionary power when it comes to the implementation of different labor market programs. As there are no concrete assignment rules, local employment agencies can choose their individual mix of programs, which is partly determined by individual experiences and preferences. This employment agency's policy style is exogenous to job-seekers' labor market outcomes.

In our case, the local job centers are responsible for the assignment of participants. Differences in the local language training intensities can be caused by differences in local labor market conditions but also by differences in the job centers' policy styles. We apply an instrumental variable approach and exploit the variation in residual local language training intensities on the job center level controlling for regional factors which can affect the training intensity. The remaining variation in treatment intensities can then be explained by differences in job centers' policy styles and be expected to be exogenous, but strongly correlated with language training participation.

We find that participants who started the language training program for professional purposes in 2014 have a higher employment probability of up to 7.6 percentage points compared to non-participants two years after the start of the program. In comparison to other studies on language training this is a high positive effect, which may be explained by its stronger orientation towards the needs of the labor market than other previously studied language training programs. Our IV approach shows that not appropriately controlling for differences in language skills leads to an underestimation of the effects.

## 2 Institutional setting

Similar to many other OECD countries, also in Germany foreign-born are more often affected by unemployment than native-born (OECD 2016). In 2014, the year we observe the participants, the unemployment rate of foreign-born was 14.3 percent compared to the unemployment rate of native-born of only 6.0 percent.<sup>1</sup> To integrate unemployed immigrants into the German labor market, the German Federal Employment Agency (FEA) and the German Federal Office for Migration and Refugees (BAMF) work closely together. Both institutions are responsible for several different measures which should help immigrants with a work permit to enter the labor market. Where the FEA mainly provides different active labor market programs like training, wage subsidies or subsidized employment schemes, which often are not specifically targeted at immigrants, the BAMF offers different language programs. Besides introduction programs-the so-called integration courses which were introduced in 2005-, the BAMF is responsible for the language training program which provides language skills for professional purposes and started in 2009, the ESF-BAMF program.<sup>2</sup> This

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<sup>1</sup> Statistik der Bundesagentur für Arbeit. The most current figures for 2017 show similar differences (foreign-born: 14.6%, native-born: 4.7%).

<sup>2</sup> The program was discontinued in 2017, but to a large extent its contents were transferred to the vocational German language promotion of the BAMF which started in July 2016 and became a standard instrument of the Federation's language promotion.



program should help immigrants to achieve a high enough level of language proficiency to enter the German labor market. Caseworkers at the local employment agency or local job center who are responsible for job-seekers can assign them to a language course if their German skills are insufficient.

There are several preconditions for participating in the program: First, potential participants must have basic German skills but not enough language proficiency to find a job. To participate in the ESF-BAMF language training, a language level of at least A1 (beginner) within the Common European Framework of Reference for Language is required, which is regularly achieved in a prior integration course. Most immigrants are entitled to participate in such an integration course. However, the local immigration office or job center can also oblige clients with particular integration needs to participate. The main part of the integration course is language training (600 lessons), followed by an orientation course, which imparts knowledge about German history, the culture and its legal system. The course ends with a final examination and participants could finish the course with a language level up to B1 (intermediate level) within the Common European Framework of Reference for Languages. Between 2009 and 2016 about 56 percent of the participants passed the language examination with a language level of B1, about 35 percent with a lower language level of A2 (elementary level), and only approximately 9 percent did not reach that level (BAMF 2017). Thus, most of those who finished an integration course have basic language skills which, however, may not be sufficient to find a job, and additional language training like the ESF-BAMF program may be needed. It is at the discretion of the caseworker in the job center whether an unemployed immigrant is assigned to the program.

Potential participants of the ESF-BAMF language course for professional purposes must be registered as job-seeking and receive either unemployment benefits in the unemployment insurance benefits system or unemployment benefit II. Unemployed people are only eligible for unemployment benefits after a period of contributory employment. They regularly receive unemployment benefits for up to one year and are registered with an employment agency. Unemployed people who are not eligible for unemployment benefits are supported by job centers and receive unemployment benefit II which is means-tested. The majority of the participants in the program are unemployment benefit II recipients and registered with job centers. Moreover, potential participants must have a migration background, but nationality and date of immigration are irrelevant. Finally, they must have fulfilled the mandatory schooling requirements.

The language training program consists of different parts: German language training, professional skill-building and work placements. The language training should provide language skills needed, for example, for writing job applications or for communicating with customers or clients and colleagues. Professional skill-building includes specialized teaching like job application training, training in vocational issues or IT training. Finally, work placements and visits of firms should help participants to learn more about a certain profession. Thus, participants not only learn how to communicate in

German but they also come into direct contact with the labor market and can apply their learned language skills in a professional environment. The program comprises up to 730 lessons and the duration of the total program is usually six months in fulltime. Alternatively, the duration is twelve months in part-time. On successfully completing the course, participants obtain a certificate of attendance.

### **3 Data and descriptive statistics**

#### **3.1 Data and sample selection**

For our empirical analysis we use administrative data provided by the Institute for Employment Research (IAB). Our main data are the Integrated Employment Biographies (IEB), which are a merged database combining individual records of different administrative sources of the FEA. They contain information on all employment episodes (except for self-employment), job search episodes, receipt of transfer payments during unemployment and episodes of program participation. Moreover, the data comprise a wide range of individual characteristics and, for employment spells, also information on the type of job and on wages (see Dorner et al. 2010 for more information on the IEB).

Moreover, we use supplementary data on the employment biographies which are collected retrospectively during the meetings of job-seekers and caseworkers (Werdegangshistorik, WGH). These data comprise information on participation in one of the language courses provided by the BAMF, the integration courses and the ESF-BAMF program. Furthermore, they include information on episodes with missing data in the IEB, for example episodes of self-employment or parental leave. An additional advantage of these data is that they also contain information on education and employment abroad. As a considerable share of individuals in our sample is observed in the IEB only for a short period, this additional information on prior employment in foreign countries (before individuals are observed in the IEB) can be helpful to model the previous employment histories.

None of the data include information on the migration background or the home country of people, but there is information on nationality in the IEB. Thus, in our empirical analysis, we use this information as a proxy for the home country. If an individual has foreign citizenship at the analysis point in time, we can use this information on nationality. If an individual has German citizenship at this point of time, we can go back in time and consider all spells with foreign citizenship in the data. We use the modus of non-German nationality as proxy for the home country of an individual with migration background. As nationality plays no role for the eligibility, we should also include the participants with German citizenship only (about 11%). These can be for example second generation migrants with German citizenship, but also ethnic German immigrants from Eastern European countries who acquired the German citizenship at the time they entered Germany (and thus always have German citizenship in the data).

For our analysis, we use the total population of participants who started language training within the ESF-BAMF program in 2014. We can follow the people in our sample up to the end of 2016. Thus, with a regular course duration of six months, we observe the participants for at least 1.5 years after they finished the language training and two years after they started the course. We choose the start of training as starting point for our estimations and report the results of the outcome variable up to two years after this point in time. In addition to the participants' data, we draw a random sample of non-participants with at least one spell of non-German citizenship in the data to identify people with migration background. To make the participants and non-participants comparable, we exclude all participants with German nationality only. Although we know that the participants have a migration background and a need for language training even if we only observe German citizenship throughout the observation period, it is impossible to distinguish between people with and without migration background for non-participants with German citizenship only. If we also used this group of non-participants, we would probably mainly include native-born.

We construct monthly data and for non-participants with multiple months in unemployment, we randomly choose one month as starting point for our analysis. The IEB covers variables indicating whether a job-seeker is supported by an employment agency (and probably receives unemployment benefit) or by a job center (and receives unemployment benefit II). As with more than 80 percent of the participants and of the non-participants the vast majority are clients of job centers, we focus on this group of unemployed people. Moreover, we exclude individuals who are in employment at the starting date and individuals with missing information on important covariates. Our final estimation sample consists of 133.679 individuals of which 9.271 are participants.

### 3.2 Descriptive statistics

In this section we present descriptive statistics of individual and regional characteristics as well as the outcome variables for participants in language training and for non-participants.<sup>3</sup> The mean values of selected socio-demographic variables can be found in the upper part of Table 1. With 38 percent the share of men is much lower for participants than for non-participants (49%). With regard to the education variables, language training participants seem to be a positive selection of the unemployed immigrants. They have higher schooling degrees and more often have a vocational or university degree, but non-participants more often obtained their vocational degree in Germany. 28 percent of the participants come from other EU countries and 25 percent from Near and Middle East countries, whereas the most important region of origin of non-participants is Turkey.

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<sup>3</sup> For the mean values of all control variables used in the estimations see Table A 1 in the Appendix.

**Table 1**  
**Mean values of selected variables**

	Participants	Non-participants
Socio-demographic characteristics		
Male	0.377	0.486***
Age (in years)	36.218	36.503**
School-leaving degree		
No secondary degree	0.233	0.326***
Lower/middle sec. degree	0.412	0.534***
Higher secondary degree	0.355	0.140***
Vocational degree		
No vocational degree	0.624	0.681***
German/unknown voc. degree	0.063	0.196***
German/unknown university degree	0.036	0.034
Foreign vocational degree	0.126	0.054***
Foreign university degree	0.150	0.035***
Region of origin		
EU countries	0.281	0.240***
Turkey	0.113	0.302***
Russia	0.064	0.039***
Other European countries	0.073	0.122***
North Africa	0.034	0.039**
Other African countries	0.068	0.036***
Near/Middle East	0.254	0.155***
Other Asian countries	0.078	0.050***
America, Australia	0.035	0.016***
Labor market history		
Months since first observation in data	80.137	173.848***
Labor market history one year prior to (hypothetical) training start		
Days in employment	19.413	23.369***
Days in job search	297.405	286.441***
Days with unemployment benefit receipt	14.402	11.907***
Days with unemployment benefit II receipt	311.015	300.881***
Labor market history five years prior to (hypothetical) training start		
Days in employment	136.805	193.975***
Days with job search	962.117	1193.356***
Days with unemployment benefit receipt	35.990	55.291***
Days with unemployment benefit II receipt	984.553	1226.844***
Days in employment in foreign country	125.328	33.191***
Integration course in the past (yes=1)	0.632	0.136***
Regional characteristics		
Unemployment rate foreign-born	19.730	18.662***
Unemployment rate native-born	8.968	8.263***
Share of foreign-born among unemployed	0.342	0.356***
Share of foreign-born in labor force	0.159	0.162***
Share of low-skilled among foreign-born	0.470	0.478***
Number of unemployed per vacancy	7.546	7.100***
Share of unemployed entering ALMP programs	0.060	0.062***
GDP per capita	41943.480	42557.676***
Population density	2069.071	1739.831***
Outcome		
Employed 6 months after (hypothetical) training start	0.058	0.092***
Employed 24 months after (hypothetical) training start	0.253	0.185***
N	9,271	124,408

Note: All numbers are shares unless otherwise indicated. \*/\*\*/\*\* indicate significant differences of mean values between participants and non-participants on the 10%/5%/1% level.

Source: IEB V12.01.00, WGH V01.01.00-201604. Own calculations.

Although the socio-demographic variables indicate that the participants have more favorable characteristics with regard to education, Table 1 also shows that they do not seem to perform better in the labor market. Both during the last year and the prior

five years before the (hypothetical) program start, they spent less time in employment than non-participants. Participants were also longer unemployed and received unemployment benefits for more days during the last year. This is not true for the prior five years which can just reflect the fact that participants migrated later than non-participants.<sup>4</sup> An indicator for that is the duration since the first observation in the administrative data which is more than 14 years for non-participants and thus much longer than for participants (80 months or less than seven years). Moreover, the number of days spent in employment outside Germany support that interpretation, as participants worked 125 days abroad during the last five years where it was only 33 days for non-participants. Finally, the share of individuals who took an integration course before is with 63 percent much higher for language training participants than for non-participants (13.6%).

There are also some differences with respect to regional variables. In comparison to non-participants, participants live in more densely populated regions with a lower GDP per capita, higher unemployment and with a higher number of unemployed per vacant job. However, the share of foreign-born is lower in these regions as well as the share of low-skilled among the foreign born and the share of unemployed who participate in ALMP programs.

Finally, for the outcome variable the lower part of Table 1 shows that, six months after the (hypothetical) start of the program-at the end of the language training-the share of employed individuals is with 5.8 percent lower for participants than for non-participants (9.2%), but after two years, one out of four former language training participants has found a job and only one in five among the non-participants. However, participants and non-participants differ with respect to observable and unobservable characteristics which we have to take into account in the empirical analysis.

## 4 Econometric approach

### 4.1 Local treatment intensity as instrumental variable

Although we have very rich data which comprise not only a variety of socio-demographic characteristics but also detailed employment histories of individuals and variables on the regional level, it has the disadvantage that there is no information on language skills. To identify the effect of language training on employment, we estimate a binary probit model

$$P(Y_i=1)=\Phi(X_i\beta+R_j\gamma+T_i\theta+u_i)$$

where  $i$  denotes the individual and  $j$  denotes the job center.  $Y_i$  is the binary outcome variable employment subject to social security contributions,  $X_i$  is a vector of individual

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<sup>4</sup> There is no information on the date of migration in the data.

covariates,  $R_j$  a vector containing the regional control variables and  $T_i$  a dummy variable indicating participation in language training. We measure employment every month after the (hypothetical) start of the course up to 24 months after treatment start.

Unobserved language proficiency but also other unobserved factors like motivation are correlated both with employment opportunities of immigrants and with participation in language training:

$$\text{Cov}(T_i, u_i) \neq 0.$$

As those who need language training should also have worse employment prospects, it is very likely that the effect will be underestimated if we cannot sufficiently control for language skills. However, other unobserved variables may work in the other direction. For example, more motivated workers are more likely to find a job and may also be more willing to participate in language training. To overcome the problem of endogeneity and to estimate unbiased effects we apply an instrumental variable approach. Therefore, we need to find an instrument  $Z$  which affects the treatment probability of an individual but not the outcome of interest. Then, the first stage estimation of the two-stage least squares estimator is

$$P(T_i=1) = \Phi(Z_i\delta + X_i\alpha + R_j\pi + \varepsilon_i).$$

We argue that the local treatment intensity is an appropriate instrument. As we control for the local labor market conditions  $R_j$  (and also for individual differences of the clients), the instrument only reflects the remaining differences in job centers' policy styles. Job centers have broad discretionary power when it comes to the choice of the mix of different labor market programs, which is partly determined by their experiences and preferences. A caseworker who is responsible for unemployed individuals with migration background has different options to integrate them into the labor market. The possibilities depend on the chosen policy mix of the local job center. Different job centers use different strategies and focus on different types of ALMP programs. Although in the case of the ESF-BAMF language training program, it is the BAMF which provides the courses, the job centers are responsible for the assignment of the participants. Some job centers may focus on a fast labor market integration by finding low-skilled jobs which do not require good language skills, while others may mainly assign the unemployed to regular active labor market policy (ALMP) programs and others may give priority to improve language skills. Walter et al. (2014) provide evidence for heterogeneous assignment practices on the job center level. Their interviews with providers of the language courses show that job centers in different regions with similar local labor markets and similar shares of immigrants used the program to a very different extent.

To calculate job center specific treatment intensities, we divide the sum of the number of participants in job center  $j$  in month  $t=1, \dots, T$  in 2014 by the average number of foreign-born unemployed people registered with job center  $j$  in 2014:

$$Z_j = \frac{\sum_t N \text{ participants}_{jt}}{\sum_t N \text{ unemployed foreignborn}_j}$$

As we have a binary outcome variable and a binary endogenous treatment variable, we use a bivariate probit model to estimate the effects of participation in language training on the employment probability with clustered standard errors at the job center level. Another approach to estimating causal effects in such a model is to disregard the binary structure of the outcome and treatment variable and use a linear instrumental variables estimator. In this case one would not estimate the average treatment effect but the local average treatment effect (Imbens and Angrist 1994). Chiburis et al. (2012) show that for a model with covariates or a low or high share of treated individuals the bivariate probit model usually outperforms linear IV.

## 4.2 Plausibility of the instrumental variable conditions

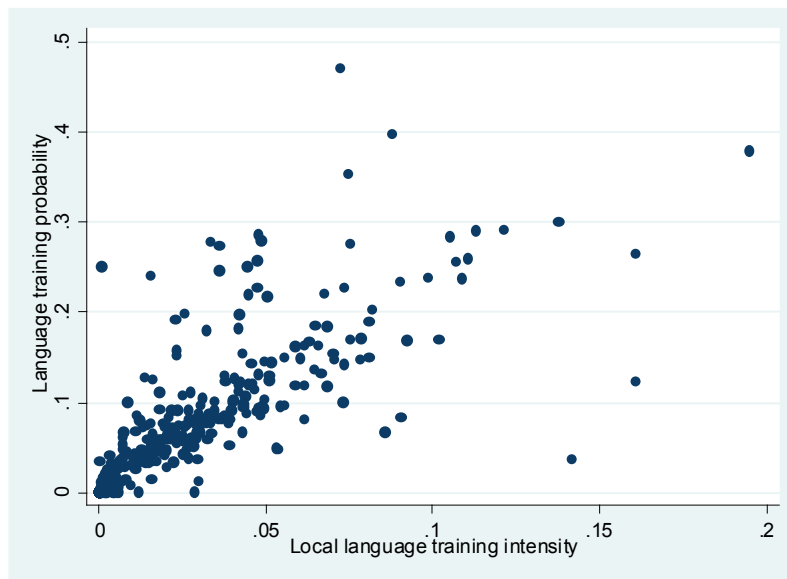
To be a valid instrument, the local residual training intensity must be correlated with language training (relevance,  $\text{cov}(Z, T) \neq 0$ ) and must not have an impact on the outcome variable employment, other than through training (exogeneity,  $\text{cov}(Z, u) = 0$ ).

First, to assess the relevance of the instrument, Figure 1 shows the correlation between the local language training intensity of job centers and the average training probability on the job center level. The mean language training intensity in our sample is 0.025 (median 0.016) with a maximum of 0.195. 65 out of 396 job centers in our sample have a language training intensity of zero. There is a strong positive correlation between the endogenous variable (language training probability) and the instrument (language training intensity) on the job center level. Moreover, the relevance of the instrument can be seen from the first stage results, which are reported and discussed in Section 5 when we present the results of the empirical analyses.



**Figure 1**

**Correlation between endogenous variable (language training probability) and instrument (language training intensity) on job center level**



Source: IEB V12.01.00, WGH V01.01.00-201604; own calculations.

The second assumption says that the instrument must not have a direct impact on the outcome variable and be uncorrelated with any other determinants of the dependent variable. This means the residual language training intensity on the job center level must not affect the employment probability of individuals other than through language course participation. A violation of the assumption would occur if individuals were aware of the training intensity and intensified their job search to avoid being assigned to language training. Individuals might also reduce their efforts to find a job if they prefer to participate in the language program and expect a high assignment probability. Moreover, they could move to other regions with a lower/higher training intensity. As explained above, the residual training intensity should reflect the preferences/policy style of job centers. The policy style of the job center is not communicated and hence unknown to the individuals. Thus, it is very unlikely that unemployed individuals change their behavior due to the actual (unobserved) training intensity in their job center. It is even more difficult to assess the level of the training intensity in the responsible job center in comparison to others. In addition to these explanations we follow Caliendo et al. (2017) and apply a regression analysis where we adjust the language training intensity  $Z_j$  for the regional economic and labor market conditions:

$$Z_j = R_j \rho + v_j.$$

The residuals  $v_j$  from the regression of the instrument  $Z_j$  on the regional characteristics  $R_j$  should then only reflect the job center specific policy style and local preferences for the program. Afterwards, the conditional instrument  $\hat{v}_i$  is regressed on the observed individual characteristics  $X_i$ :

$$\hat{v}_j = X_i \tau + \mu_i.$$



If these characteristics do not affect the residual training intensity, the instrument creates exogenous variation in the language training participation decision which cannot be explained by observable differences between participants and non-participants.

The upper part of Table 2 shows the results of the regression of the instrument  $Z_j$  on the regional characteristics  $R_j$ . With an Adjusted  $R^2$  of 0.626, regional characteristics explain a large part of the variation of the local language training intensity. The lower part of Table 2 presents the number of significant coefficients and the Adjusted  $R^2$  of the second regression where the first column additionally shows the  $R^2$  and number of significant coefficients of the regression of the unconditional instrument  $Z_j$  on  $X_i$ . With an  $R^2$  of 0.07 individual characteristics already only explain a small share of the variance of the unconditional instrument  $Z_j$ . Still, the number of significant coefficients and  $R^2$  decline when regional characteristics are corrected for. Several coefficients are still significant due to the large sample size, but they only explain 1.6 percent of the variance in the conditional language training intensity. The residual language training intensity (and even the unconditional language training intensity) is hardly correlated with individual characteristics. Thus differences with respect to observed characteristics of the job-seekers do not influence the local policy style after controlling for factors reflecting the local labor market conditions. Still, we additionally control for these individual characteristics in our instrumental variable analysis.

**Table 2**  
**Effect of observed individual characteristics on the (conditional) instrument**

Regression of instrument $Z_i$ on regional characteristics $R_i$		
Unemployment rate foreign-born		0.001*** (0.000)
Unemployment rate native-born		-0.001*** (0.000)
Share of foreign-born among unemployed		-0.109*** (0.002)
Share of foreign-born in labor force		0.130*** (0.004)
Share of low-skilled among foreign-born		-0.053*** (0.001)
Share of women among foreign-born		0.051*** (0.002)
Share of foreign-born among different age groups		***
Share of foreign-born from different regions of origin		***
Number of unemployed per vacancy		-0.002*** (0.000)
Share of unemployed entering ALMP programs		-0.098*** (0.002)
Share of working population in different sectors		***
GDP per capita (10000 <sup>-1</sup> )		0.002 (0.000)
Population density (10000 <sup>-1</sup> )		0.050 (0.001)
Adj. $R^2$		0.626
Regression of (conditional) instrument $Z_i/v_i$ on observed individual characteristics $X_i$		
	$Z_i$	$v_i$
Number of significant coefficients	92	70
Adj. $R^2$	0.070	0.016

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office. \*\*\*/\*\*\* indicate significant marginal effects on the 10%/5%/1% level. Standard errors in parentheses, clustered at the job center level.

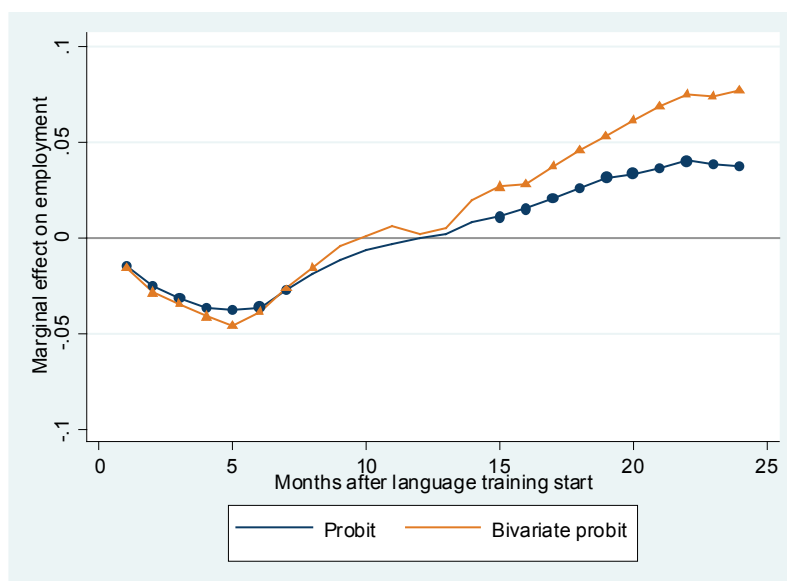
## 5 Empirical Results

### 5.1 Main results

We estimate the effects of the language training program on the employment probability for each month up to 24 months after treatment start. Besides socio-demographic control variables and variables for detailed labor market history up to five years before the (hypothetical) language training start, we include variables for the labor market status prior to the (hypothetical) language training start, dummy variables for the duration of the current unemployment spell and variables indicating the elapsed time since the first spell in the data. We also have variables for the last occupation and the skill level of the last job and dummies if individuals did not work before. On the regional level, besides the variables in Table 1, we control for the industry composition and for the age composition of foreign-born and the composition of foreign-born with respect to the region of origin. Moreover, we include calendar months dummies. As we do not find effect heterogeneity with respect to gender, we only present results of estimations where we include both men and women.

We first estimate a probit model without taking endogeneity of participation in the language course into account. Afterwards, we use our described IV approach and estimate a bivariate probit model. Figure 2 shows the results for both models for each month after (potential) language training start. The detailed results for months 6, 12, 18 and 24 can be found in Table 3.<sup>5</sup> With regard to the relevance of the instrument, it gets obvious from Table 3 that the local training intensity has a very strong impact on the probability to participate in language training. In all estimations it is highly significant. An increase in the local language training intensity by 1 percentage point increases the participation probability of job-seekers in this job center by about 1.3 percentage points. A Wald test shows that at least for later months endogeneity is present and our IV approach is appropriate.

**Figure 2**  
**Marginal effects of language training on employment (sample 1)**



Note: Dots indicate significance at the 10% level. Standard errors clustered at the job center level.

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office.

When we first look at the probit results where we ignore the endogeneity of language training participation, we find that during the first eight months after the start of the course, participation significantly reduces the employment chances by up to about three percentage points (see Figure 2) but the effect of language training on employment gets positive afterwards and increases up to 3.7 percentage points at the end of the observation period (see Table 3).

Figure 2 shows that, except for the first seven months after language training start, the effects are higher for the bivariate probit model. The employment effect gets positive after 10 months and significantly positive after 15 months. After two years, the IV

<sup>5</sup> Table A 2 in the Appendix shows the full probit and bivariate probit estimation results exemplarily for month 24. All other estimation results are available from the author upon request.

results indicate that participants have a 7.6 percentage points higher employment probability than non-participants (see Table 3). This is a quite high effect, given that the overall employment share after 24 months is approximately 19 percent.

The marginal effect of language training in the bivariate probit model two years after the (hypothetical) start of language training is twice as high as the marginal effect of the probit model. Thus, not taking into account the endogeneity of language training participation leads to an underestimation of the effects. This seems very reasonable, as unobserved language skills should be worse for participants who need additional language training.

**Table 3**  
**Marginal employment effects of language training and first stage results of bivariate probit (sample 1)**

Month after language training start	6	12	18	24
<b>Probit</b>				
Participation in language training	-0.036*** (0.003)	-0.001 (0.005)	0.026*** (0.005)	0.037*** (0.005)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
<b>Bivariate probit</b>				
Participation in language training	-0.039*** (0.007)	0.002 (0.012)	0.046*** (0.013)	0.076*** (0.016)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
<i>First stage (dependent variable: participation in language training)</i>				
Language training intensity	1.297*** (0.093)	1.296*** (0.093)	1.296*** (0.093)	1.296*** (0.093)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Chi2 of test for exogeneity	0.235	0.096	3.364*	10.418***
N	133,678	133,678	133,678	133,678

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office. \*\*\*/\*\* indicate significant marginal effects on the 10%/5%/1% level. Standard errors in parenthesis, clustered at the job center level.

## 5.2 Robustness

To check the robustness of our results, we carried out different additional analyses. First, one concern may be that we cannot control for all relevant regional factors which are correlated with the conditional policy styles and the outcome variable employment. Therefore, in an alternative specification, we include regional fixed effects at the job center level. So far, we used a variable for the language training intensity which was based on the total number of participants in 2014. We use this annual value because

language training is a rare event in many job centers. However, in order to have variation on the job center level, we now use monthly language training intensities. Those job centers without any language course participants in 2014 are excluded from the analysis.

**Table 4**  
**Job center fixed effects estimates: Marginal employment effects of language training and first stage results of bivariate probit**

Month after language training start	6	12	18	24
<b>Probit</b>				
Participation in language training	-0.036*** (0.003)	-0.000 (0.005)	0.025*** (0.004)	0.037*** (0.005)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Regional fixed-effects	Yes	Yes	Yes	Yes
<b>Bivariate probit</b>				
Participation in language training	-0.036*** (0.007)	0.009 (0.011)	0.049*** (0.012)	0.079*** (0.016)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Regional fixed-effects	Yes	Yes	Yes	Yes
<i>First stage (dependent variable: participation in language training)</i>				
Language training intensity	3.214*** (0.441)	3.214*** (0.441)	3.212*** (0.441)	3.211*** (0.320)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Regional fixed-effects	Yes	Yes	Yes	Yes
Chi2 of test for exogeneity	0.000	0.964	6.181**	12.138***
N	123,502	123,502	123,502	123,502

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office. \*\*\*/\*\* indicate significant marginal effects on the 10%/5%/1% level. Standard errors in parenthesis, clustered at the job center level.

Table 4 shows that the results are very similar to those without regional fixed effects in Table 3. The marginal effect of language training on employment is 7.9 percentage points after two years and even slightly higher than the effect without fixed effects. Again, the results of the probit model indicate a much lower effect when unobserved initial language skills are not considered.

There may also be concerns regarding the choice of adequate non-participants for our sample. Although all non-participants in our sample have a migration background and are unemployed, we do not know if they really meet all the eligibility criteria for the language training program. In particular, we do not know whether they already

have German skills on a very basic level which are a prerequisite for participation. To avoid comparing participants with non-eligible participants, as a robustness check, we use a second sample where we focus on prior integration course participation to identify appropriate non-participants.<sup>6</sup> We exploit the information on integration course participation from the supplementary WGH data and only include people who participated in an integration course during the last year before the analysis point in time. Here, we can also include language training participants with German citizenship only, as individuals who participated in an integration course always have a migration background.

Another advantage of using a sample of former integration course participants is that we can align the initial language skills of participants and non-participants to some extent. As more than 90 percent of all integration course participants finish the course with a language level of A2 or B1 (BAMF 2017), they should have quite similar language skills afterwards. As we restrict our sample to immigrants who took an integration course during the last year, it is reasonable to assume that participants and non-participants did not have much possibilities to advance their German skills very differently during some months. Thus, in addition to the sample of participants who recently finished an integration course, we draw a random sample of individuals who participated in an integration course during the preceding year, but do not participate in the language training program in 2014 and also have not participated in the program before. About 40 percent of the language course participants in 2014 also took an integration course in the last year. Those who have not taken an integration course before they participate in the language training program and those who took it more than one year ago are excluded in this sample. Moreover, we exclude all individuals with a duration of the integration course of less than 90 days, as they probably dropped out of the course without completing it. Our sample for the robustness check consists of 19.649 individuals of which 3.537 are participants. The disadvantage of this approach is that we can only estimate effects for a specific subgroup of all participants. The mean values of the covariates for this sample can be found in Table A1. There are some differences compared to the main estimation sample. The observed individuals are somewhat younger and they also differ somewhat with respect to the regions of origin, but, similar to the main sample, participants are better educated and have less working experience in the German labor market.

Table 5 shows the detailed results of the probit models and bivariate probit models 6, 12, 18 and 24 months after training for this second sample. First, Table 5 reveals that, when we only concentrate on individuals who recently completed an integration course, the differences between the marginal effects of the probit and bivariate probit estimations seem to be at least somewhat smaller than in main sample. However, although we adjust the language skills of participants and non-participants to a certain extent using the integration course information, we do not know how people passed

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<sup>6</sup> For more details on integration courses see Section 2.

their examinations and whether they further improved their German in the few months afterwards. Thus, even in this sample, there can remain unobserved differences in language proficiency. Still, endogeneity seems to be less pronounced than for the first sample, where we do not control for prior integration course participation.

**Table 5**  
**Marginal employment effects of language training and first stage results of bivariate probit (sample 2: integration course in last year)**

Month after language training start	6	12	18	24
<b>Probit</b>				
Participation in language training	-0.059*** (0.005)	-0.008 (0.006)	0.021*** (0.007)	0.047*** (0.009)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
<b>Bivariate probit</b>				
Participation in language training	-0.048** (0.019)	-0.011 (0.026)	0.039 (0.031)	0.063* (0.033)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
<i>First stage (dependent variable: participation in language training)</i>				
Language training intensity	3.219*** (0.321)	3.210*** (0.321)	3.213*** (0.320)	3.211*** (0.320)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Labor market history	Yes	Yes	Yes	Yes
Regional variables	Yes	Yes	Yes	Yes
Time fixed-effects	Yes	Yes	Yes	Yes
Chi2 of test for exogeneity	0.354	0.009	0.035	0.273
N	19,649	19,649	19,649	19,649

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office. \*\*\*/\*\* indicate significant marginal effects on the 10%/5%/1% level. Standard errors in parenthesis, clustered at the job center level.

Due to a much smaller sample size, the IV results are less precise compared to the main sample. They indicate that language training increases the employment probability of participants who took an integration course before by 6.3 percentage points after 24 months which is only somewhat higher than the effect from the probit models (4.7 percentage points), especially in comparison to the difference in the main estimation sample (7.6 p.p. in the bivariate probit model vs 3.7 p.p. in the probit model).

## 6 Conclusion

Language barriers of immigrants are a major factor that hamper labor market integration. Formal language training could help to accelerate the integration process. In this

paper we analyze the employment effects of a language training program for immigrants in Germany which provides German language training with a focus on employment-related topics and typically has a duration of six months.

Our results from bivariate probit estimations show that, after a lock-in period of approximately eight to ten months, participation in language training increases the employment probability of participants. Two years after the start of the program they have a higher employment probability of more than seven percentage points. This is a quite high effect, given that the overall employment share after 24 months is approximately 19 percent. When we compare these results to the results of a probit model without controlling for differences in the unobserved initial language training skills (and probably other unobserved characteristics), we find that without addressing the problem of unobserved language skills, we underestimate the true effect. In a sample of individuals who should have more similar language skills because they recently finished an integration course, we find somewhat smaller differences between probit and bivariate probit estimates.

Our clear positive effects are in contrast to some of the results of the (few) previous studies on the effects of language training. One explanation for that could be the program's strong orientation towards the specific (linguistic) requirements of the labor market. Moreover, the particular features of the program like application training and work placements go beyond the content of the commonly very general language courses which are mainly offered to immigrants. All in all, providing language training with a strong focus on the labor market seems to be a promising strategy also for other immigration countries.

One important aspect which we do not consider in this study is the quality of the jobs. Some low-skilled jobs only require very basic language skills, whereas language proficiency is more important for skilled jobs. Thus, future research should also consider the types of jobs participants find and the wage effects of the language training program.

Moreover, because of too low observation numbers for some groups, we do not distinguish between participants from different regions of origin. It would be even more interesting to differentiate people according to the linguistic distance of their first language to the German language. Although people from countries with a more similar language can profit more from the course as they more easily learn German, the effects may also be stronger for individuals with a very different first language as they will face more difficulties to learn the language in everyday life.



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## Appendix

**Table A1**  
**Mean values of control variables**

	Sample 1		Sample 2	
	Partici- pants	Non-partic- ipants	Partici- pants	Non-partic- ipants
Male	0.377	0.486	0.419	0.392
Age	36.218	36.503	34.994	34.971
Children	0.555	0.542	0.494	0.576
Single parent	0.142	0.072	0.116	0.071
<i>Marital status</i>				
Single	0.262	0.300	0.271	0.212
Married, separated	0.010	0.002	0.007	0.001
Married	0.513	0.514	0.520	0.622
Divorced	0.013	0.003	0.007	0.001
Widowed	0.002	0.000	0.000	0.000
unknown	0.201	0.182	0.195	0.164
<i>Highest educational degree</i>				
No vocational degree	0.510	0.631	0.491	0.699
German or unknown vocational degree	0.049	0.171	0.038	0.060
Higher secondary schooling degree	0.115	0.050	0.123	0.046
Higher secondary schooling degree and German vocational degree	0.014	0.024	0.012	0.007
German or unknown university degree	0.036	0.034	0.029	0.019
Vocational degree abroad	0.126	0.054	0.132	0.094
University degree abroad	0.150	0.035	0.176	0.075
<i>Schooling degree</i>				
No secondary degree	0.233	0.326	0.191	0.373
Lower secondary degree	0.245	0.344	0.237	0.279
Lower or middle secondary degree	0.011	0.055	0.012	0.049
Middle secondary degree	0.156	0.135	0.164	0.112
Higher secondary degree (Fach- hochschulreife)	0.057	0.035	0.067	0.029
Higher secondary degree (Fach- hochschulreife or Abitur)	0.025	0.013	0.033	0.021
Higher secondary degree (Abitur)	0.273	0.091	0.296	0.137
<i>Region of origin</i>				
German citizenship only in data			0.088	0.074
EU countries	0.281	0.240	0.283	0.239
Turkey	0.113	0.302	0.076	0.175
Russia	0.064	0.039	0.054	0.036
Other European countries	0.073	0.122	0.051	0.066
North Africa	0.034	0.039	0.031	0.040
Other African countries	0.068	0.036	0.056	0.055
Near/Middle East	0.254	0.155	0.278	0.243
Other Asian countries	0.078	0.050	0.058	0.054
America, Australia	0.035	0.016	0.025	0.018
<i>Labor market history one year prior to (hypothetical) training start</i>				
Days in employment	19.413	23.369	6.256	9.552
Days in job search	297.405	286.441	332.208	332.849
Number of job search episodes	1.056	1.088	1.051	1.067
Days in ALMP program	17.158	19.733	9.975	15.027
Number of episodes in ALMP program	0.216	0.214	0.146	0.198
Days with unemployment benefit receipt	14.402	11.907	7.448	6.366
Days with unemployment benefit II re- ceipt	311.015	300.881	346.223	343.484

	Sample 1		Sample 2	
	Partici- pants	Non-partic- ipants	Partici- pants	Non-partic- ipants
Days with sickness absence during un- employment	2.114	3.865	1.156	2.581
Number of episodes with unemployment benefit receipt	0.103	0.103	0.048	0.046
Number of episodes with unemployment benefit II receipt	1.066	1.088	1.063	1.096
Number of episodes with sickness ab- sence during unemployment	0.162	0.263	0.090	0.149
Mean wage	5.115	6.605	2.262	3.345
Cumulated wage	686.038	914.290	182.427	318.054
Days in education	6.349	16.885	1.719	3.382
Days in self-employment	3.991	5.958	1.487	1.706
Days in military/civilian service	0.010	0.032	0.000	0.008
Days on parental leave, house- wife/househusband	16.432	22.626	6.840	11.956
Days in other measures	6.734	2.694	3.173	5.213
Days with non-professional activities	0.557	0.826	0.439	0.418
Days with other status	50.648	76.460	32.090	37.667
Days in other measures	0.037	0.080	0.014	0.026
Number of episodes of self-employment	0.023	0.030	0.010	0.011
Number of episodes on parental leave, working as housewife/househusband	0.077	0.094	0.040	0.079
Number of episodes in other measures	0.066	0.021	0.041	0.060
Days in employment outside Germany	2.163	1.585	0.652	0.391
<i>Labor market history five years prior to (hypothetical) training start</i>				
Days in employment	136.805	193.975	79.757	103.210
Days in job search	962.117	1193.356	851.542	1084.787
Number of job search episodes	1.521	1.878	1.358	1.437
Days in ALMP program	67.094	110.603	31.623	49.596
Number of episodes in ALMP program	0.558	0.850	0.309	0.450
Days with unemployment benefit receipt	35.990	55.291	25.339	32.341
Days with unemployment benefit II re- ceipt	984.553	1226.844	875.696	1114.839
Days with sickness absence during un- employment	6.646	15.755	3.578	8.723
Number of episodes with unemployment benefit receipt	0.206	0.344	0.122	0.159
Number of episodes with unemployment benefit II receipt	1.398	1.714	1.277	1.428
Number of episodes with sickness ab- sence during unemployment	0.441	1.001	0.235	0.478
Mean wage	1.434	3.162	0.945	1.701
Cumulated wage	1016.727	2119.821	578.823	968.851
Days in education	125.652	137.404	134.251	76.080
Days in self-employment	55.882	56.178	52.900	41.708
Days in military/civilian service	1.668	0.741	2.835	1.536
Days on parental leave, house- wife/househusband	177.839	132.022	154.732	168.061
Days in other measures	18.852	10.002	9.972	13.172
Days with non-professional activities	2.622	3.131	2.473	1.935
Days with other status	393.516	322.054	382.728	360.710
Days in other measures	0.208	0.262	0.211	0.140
Number of episodes of self-employment	0.092	0.098	0.079	0.073
Number of episodes on parental leave, working as housewife/househusband	0.252	0.206	0.221	0.284
Number of episodes in other measures	0.134	0.058	0.081	0.107

	Sample 1		Sample 2	
	Partici- pants	Non-partic- ipants	Partici- pants	Non-partic- ipants
Days in employment outside Germany	125.328	33.191	191.958	98.970
Months since first observation in data	80.137	173.848	58.754	91.024
Duration of current unemployment spell (months)	27.796	33.751	26.049	33.300
Integration course in the past (yes=1)	0.632	0.136	1.000	1.000
Elapsed time since end of integration course			156.380	171.982
<i>Last occupation</i>				
Missing	0.589	0.326	0.708	0.638
Armed forces occupations	0.000	0.000	0.000	0.000
agricultural occupations, forestry	0.003	0.004	0.003	0.003
Occupations in horticulture floristry	0.005	0.012	0.005	0.007
Occupations involving extraction/production of raw materials	0.001	0.003	0.001	0.001
Plastics and wood production and processing	0.005	0.013	0.005	0.005
Occupations in paper production and printing, technical media design	0.003	0.007	0.002	0.002
Metal production and processing	0.013	0.034	0.012	0.013
Mechanical and automotive engineering	0.005	0.017	0.005	0.007
Electrical occupations	0.004	0.007	0.002	0.002
Occupations in technical development, production control	0.003	0.007	0.001	0.003
Occupations in textile industry	0.003	0.007	0.003	0.003
Food production and processing	0.054	0.069	0.041	0.055
Occupations in construction planning, architecture	0.000	0.001	0.000	0.000
Construction occupations	0.012	0.033	0.012	0.016
Interior construction occupations	0.004	0.011	0.004	0.006
Occupations in supply engineering, build-ings	0.004	0.007	0.003	0.003
Occupations in biology, chemistry, physics, mathematics	0.002	0.003	0.001	0.001
IT occupations	0.000	0.000	0.000	0.000
Transport and logistics occupations	0.052	0.082	0.040	0.046
Driver	0.007	0.030	0.005	0.007
Personal security occupations	0.006	0.015	0.005	0.003
Cleaning occupations	0.082	0.099	0.061	0.092
Retail occupations	0.003	0.007	0.001	0.002
Sales occupations	0.026	0.060	0.016	0.020
Hotel/restaurant occupations, occupa-tions in tourism	0.048	0.048	0.031	0.031
Management occupations	0.023	0.038	0.012	0.011
Financial service occupations	0.001	0.002	0.001	0.000
Occupation in law and administration	0.000	0.001	0.000	0.000
Health care occupations	0.008	0.013	0.002	0.003
Non-medical health care occupations	0.005	0.010	0.002	0.003
Social occupations	0.017	0.021	0.014	0.011
Instructing and teaching occupations	0.002	0.003	0.001	0.001
Economics, social science, linguistics	0.001	0.001	0.000	0.000
Occupations in advertising, marketing	0.004	0.005	0.002	0.000
Product design	0.000	0.001	0.000	0.000
Artistic occupations	0.003	0.003	0.001	0.001
<i>Skill level last job</i>				
Missing	0.187	0.189	0.136	0.152
Unskilled	0.202	0.452	0.146	0.202

	Sample 1		Sample 2	
	Partici- pants	Non-partic- ipants	Partici- pants	Non-partic- ipants
Skilled	0.011	0.014	0.005	0.003
Specialist	0.011	0.019	0.005	0.004
Specialist with highly complex activities	0.004	0.000	0.002	0.000
Status before (hypothetical) language training start				
Other	0.069	0.050	0.101	0.130
On parental leave, working as house- wife/househusband	0.021	0.058	0.010	0.048
Marginal employment	0.161	0.186	0.162	0.196
Job-seeking	0.984	0.932	0.988	0.956
Unemployment benefit receipt	0.052	0.045	0.011	0.011
Unemployment benefit II receipt	0.969	0.943	0.989	0.972
ALMP measure	0.068	0.075	0.062	0.105
Education, trainee	0.010	0.041	0.007	0.022
Self-employment	0.004	0.011	0.002	0.005
Employment	0.013	0.024	0.009	0.023
Unemployment rate foreign-born	19.730	18.662	19.326	18.856
Unemployment rate native-born	8.968	8.263	8.721	8.410
Share of foreign-born among unem- ployed	0.342	0.356	0.340	0.349
Share of foreign-born in labor force	0.159	0.162	0.157	0.159
Share of women among foreign-born	0.477	0.477	0.477	0.476
Share of foreign-born age 25-29	0.146	0.145	0.145	0.145
Share of foreign-born age 30-34	0.148	0.147	0.147	0.147
Share of foreign-born age 35-39	0.131	0.132	0.131	0.131
Share of foreign-born age 40-44	0.108	0.109	0.108	0.109
Share of foreign-born age 44-49	0.084	0.086	0.084	0.085
Share of foreign-born age 50 and older	0.119	0.120	0.119	0.120
Share of low-skilled among foreign-born	0.470	0.478	0.470	0.474
Share of foreign-born from EU countries	0.307	0.309	0.307	0.307
Share of foreign-born from Turkey	0.257	0.264	0.260	0.256
Share of foreign-born from Russia	0.039	0.037	0.039	0.039
Share of foreign-born from other Euro- pean countries	0.114	0.115	0.113	0.115
Share of foreign-born from North Africa	0.032	0.033	0.033	0.033
Share of foreign-born from other African countries	0.038	0.039	0.039	0.040
Share of foreign-born from Near/Middle East	0.134	0.133	0.134	0.136
Share of foreign-born from other Asian countries	0.057	0.052	0.054	0.055
Share of foreign-born from America, Aus- tralia	0.021	0.020	0.021	0.020
Number of unemployed per vacancy	7.546	7.100	7.154	6.999
Share of unemployed entering ALMP pro- grams	0.060	0.062	0.061	0.059
<i>Share of working population in</i>				
Agriculture and forestry	0.017	0.015	0.015	0.016
Production industry	0.198	0.196	0.186	0.192
Manufacturing	0.184	0.182	0.172	0.178
Construction	0.060	0.056	0.057	0.057
Trade, transport, catering industry	0.279	0.276	0.278	0.281
Financial sector	0.204	0.197	0.201	0.199
Public sector	0.338	0.327	0.331	0.328
GDP per capita	41943.480	42557.676	42467.891	42760.859

	Sample 1		Sample 2	
	Partici- pants	Non-partic- ipants	Partici- pants	Non-partic- ipants
Population density	2069.071	1739.831	1909.778	1803.318
<i>Federal state</i>				
Schleswig-Holstein	0.029	0.031	0.033	0.036
Hamburg	0.041	0.050	0.043	0.064
Lower Saxony	0.062	0.083	0.067	0.084
Bremen	0.015	0.020	0.014	0.020
North-Rhine-Westphalia	0.272	0.323	0.313	0.290
Hesse	0.054	0.083	0.059	0.061
Rhineland-Palatinate	0.039	0.041	0.039	0.052
Baden-Württemberg	0.072	0.103	0.079	0.083
Bavaria	0.100	0.090	0.099	0.112
Saarland	0.011	0.010	0.020	0.009
Berlin	0.236	0.118	0.172	0.125
Brandenburg	0.016	0.010	0.016	0.007
Mecklenburg-Vorpommern	0.010	0.006	0.008	0.010
Saxony	0.028	0.017	0.025	0.023
Saxony-Anhalt	0.006	0.009	0.004	0.012
Thuringia	0.009	0.007	0.010	0.013
N	9.271	124.408	3.537	16.112



**Table A2**  
**Probit and Bivariate probit results (coefficients and s.e.) for sample 1 with out-**  
**come employment after 24 months**

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Male	0.219*** (0.011)	0.220*** (0.011)
Age	-0.017*** (0.001)	-0.018*** (0.001)
Single parent	0.068*** (0.019)	0.060*** (0.020)
Children	0.139*** (0.011)	0.136*** (0.011)
<i>Duration since first observation in data (years)</i>		
<1	-0.277 (0.357)	-0.394 (0.356)
1	0.169*** (0.030)	0.150*** (0.030)
2	0.161*** (0.031)	0.132*** (0.031)
3	0.098*** (0.027)	0.073** (0.029)
4	0.062** (0.030)	0.047 (0.029)
5	-0.011 (0.028)	-0.023 (0.029)
6	0.034 (0.029)	0.025 (0.029)
7	0.056** (0.025)	0.049* (0.025)
8	0.015 (0.025)	0.008 (0.025)
9	0.049* (0.027)	0.043 (0.027)
10	-0.017 (0.020)	-0.021 (0.020)
11	0.033* (0.019)	0.029 (0.019)
12	0.034 (0.022)	0.032 (0.022)
13	0.046** (0.022)	0.044** (0.022)
14	0.052** (0.025)	0.051** (0.025)
15	0.040* (0.021)	0.039* (0.021)
>15	reference	reference
<i>Duration of current unemployment spell</i>		
<6 months	0.118*** (0.024)	0.116*** (0.024)
>=6months, <1 year	0.089*** (0.019)	0.088*** (0.019)
1-2 years	0.106*** (0.018)	0.105*** (0.018)
2-5 years	0.071*** (0.017)	0.071*** (0.017)
>5 years	reference	reference
<i>Highest educational degree</i>		
No vocational degree	reference	reference
German or unknown vocational degree	0.113*** (0.012)	0.113*** (0.012)



	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Higher secondary schooling degree	-0.037 (0.023)	-0.042* (0.023)
Higher secondary schooling degree and German vocational degree	0.085*** (0.032)	0.086*** (0.032)
German or unknown university degree	0.147*** (0.030)	0.146*** (0.030)
Vocational degree abroad	0.122*** (0.021)	0.118*** (0.021)
University degree abroad	0.109*** (0.027)	0.100*** (0.028)
<i>Schooling degree</i>		
No secondary degree	reference	reference
Lower secondary degree	0.051*** (0.012)	0.048*** (0.012)
Lower or middle secondary degree	0.084*** (0.018)	0.085*** (0.018)
Middle secondary degree	0.064*** (0.016)	0.059*** (0.016)
Higher secondary degree (Fachhochschulreife)	0.125*** (0.029)	0.119*** (0.029)
Higher secondary degree (Fachhochschulreife or Abitur)	0.326*** (0.031)	0.323*** (0.031)
Higher secondary degree (Abitur)	0.084*** (0.024)	0.075*** (0.024)
<i>Region of origin</i>		
EU countries	reference	reference
Turkey	-0.101*** (0.015)	-0.102*** (0.015)
Russia	-0.077*** (0.025)	-0.079*** (0.025)
Other European countries	-0.065*** (0.016)	-0.065*** (0.016)
North Africa	-0.049** (0.025)	-0.049** (0.025)
Other African countries	0.187*** (0.021)	0.182*** (0.021)
Near/Middle East	-0.140*** (0.016)	-0.143*** (0.016)
Other Asian countries	0.009 (0.023)	0.006 (0.023)
America, Australia	0.045 (0.032)	0.039 (0.033)
<i>Federal state</i>		
Schleswig-Holstein	reference	reference
Hamburg	0.248*** (0.060)	0.242*** (0.059)
Lower Saxony	-0.025 (0.036)	-0.026 (0.036)
Bremen	0.053 (0.039)	0.053 (0.039)
North-Rhine-Westphalia	-0.011 (0.037)	-0.012 (0.037)
Hesse	0.048 (0.036)	0.047 (0.036)
Rhineland-Palatinate	0.058 (0.042)	0.061 (0.042)
Baden-Württemberg	0.029 (0.040)	0.032 (0.040)
Bavaria	0.078* (0.040)	0.081** (0.041)
Saarland	-0.088	-0.085

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
	(0.073)	(0.073)
Berlin	0.219***	0.207***
	(0.054)	(0.054)
Brandenburg	-0.003	-0.008
	(0.062)	(0.062)
Mecklenburg-Vorpommern	0.036	0.035
	(0.071)	(0.071)
Saxony	0.021	0.022
	(0.063)	(0.061)
Saxony-Anhalt	-0.007	-0.003
	(0.058)	(0.058)
Thuringia	0.114*	0.115*
	(0.060)	(0.061)
<i>Marital status</i>		
Single	reference	reference
Married, separated	0.106	0.080
	(0.081)	(0.083)
Married	0.029**	0.032**
	(0.013)	(0.013)
Divorced	0.154**	0.136**
	(0.068)	(0.068)
Widowed	0.289*	0.279*
	(0.167)	(0.167)
unknown	0.006	0.009
	(0.014)	(0.014)
Labor market <i>history</i> one year prior to (hypothetical) training start		
Days in employment	0.001***	0.001***
	(0.000)	(0.000)
Days in job search	-0.000**	-0.000**
	(0.000)	(0.000)
Number of job search episodes	0.030**	0.030**
	(0.012)	(0.012)
Days in ALMP program	0.000***	0.000***
	(0.000)	(0.000)
Number of episodes in ALMP program	0.074***	0.073***
	(0.015)	(0.015)
Days with unemployment benefit receipt	0.000	0.000
	(0.000)	(0.000)
Days with unemployment benefit II receipt	0.000*	0.000
	(0.000)	(0.000)
Days with sickness absence during unemployment	-0.001**	-0.001*
	(0.001)	(0.001)
Number of episodes with unemployment benefit receipt	-0.019	-0.018
	(0.021)	(0.021)
Number of episodes with unemployment benefit II receipt	0.017	0.019
	(0.013)	(0.013)
Number of episodes with sickness absence during unemployment	0.009	0.009
	(0.012)	(0.012)
Mean wage	0.005***	0.005***
	(0.000)	(0.000)
Cumulated wage	-0.000***	-0.000***
	(0.000)	(0.000)
Days in education	0.002***	0.002***
	(0.000)	(0.000)
Days in self-employment	0.001***	0.001***
	(0.000)	(0.000)
Days in military/civilian service	-0.001	-0.001
	(0.001)	(0.001)
Days on parental leave, housewife/househusband	0.001***	0.001***
	(0.000)	(0.000)
Days in other measures	-0.000	-0.000

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
	(0.000)	(0.000)
Days with non-professional activities	-0.000	-0.000
	(0.000)	(0.000)
Days with other status	-0.000***	-0.000***
	(0.000)	(0.000)
Days in other measures	-0.212***	-0.208***
	(0.032)	(0.032)
Number of episodes of self-employment	0.077*	0.079*
	(0.042)	(0.042)
Number of episodes on parental leave, working as housewife/househusband	-0.273***	-0.268***
	(0.029)	(0.029)
Number of episodes in other measures	0.042	0.035
	(0.039)	(0.039)
Days in employment outside Germany	0.000	0.000
	(0.000)	(0.000)
<i>Labor market history five years prior to (hypothetical) training start</i>		
Days in employment	0.000***	0.000***
	(0.000)	(0.000)
Days in job search	-0.000	-0.000
	(0.000)	(0.000)
Number of job search episodes	-0.019***	-0.020***
	(0.005)	(0.005)
Days in ALMP program	0.000***	0.000***
	(0.000)	(0.000)
Number of episodes in ALMP program	0.024***	0.024***
	(0.006)	(0.006)
Days with unemployment benefit receipt	0.000***	0.000***
	(0.000)	(0.000)
Days with unemployment benefit II receipt	-0.000***	-0.000***
	(0.000)	(0.000)
Days with sickness absence during unemployment	-0.000*	-0.000*
	(0.000)	(0.000)
Number of episodes with unemployment benefit receipt	0.014	0.014
	(0.010)	(0.010)
Number of episodes with unemployment benefit II receipt	0.010*	0.011**
	(0.005)	(0.006)
Number of episodes with sickness absence during unemployment	-0.020***	-0.020***
	(0.005)	(0.005)
Mean wage	0.002***	0.002***
	(0.001)	(0.001)
Cumulated wage	-0.000***	-0.000***
	(0.000)	(0.000)
Days in education	0.000***	0.000***
	(0.000)	(0.000)
Days in self-employment	0.000***	0.000***
	(0.000)	(0.000)
Days in military/civilian service	0.000**	0.000**
	(0.000)	(0.000)
Days on parental leave, housewife/househusband	-0.000	-0.000
	(0.000)	(0.000)
Days in other measures	0.000**	0.000**
	(0.000)	(0.000)
Days with non-professional activities	0.000	0.000
	(0.000)	(0.000)
Days with other status	-0.000***	-0.000***
	(0.000)	(0.000)
Days in other measures	-0.049***	-0.050***
	(0.013)	(0.013)
Number of episodes of self-employment	-0.012	-0.011
	(0.015)	(0.015)
	-0.004	-0.003

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Number of episodes on parental leave, working as housewife/househusband	(0.017)	(0.017)
Number of episodes in other measures	-0.006 (0.021)	-0.008 (0.021)
Days in employment outside Germany	0.000*** (0.000)	0.000*** (0.000)
<i>Last occupation</i>		
Missing	reference	reference
Armed forces occupations	-0.067 (0.407)	-0.074 (0.408)
agricultural occupations, forestry	0.071 (0.088)	0.072 (0.088)
Occupations in horticulture floristry	-0.057 (0.061)	-0.056 (0.061)
Occupations involving extraction/production of raw materials	0.024 (0.095)	0.025 (0.095)
Plastics and wood production and processing	0.046 (0.053)	0.047 (0.053)
Occupations in paper production and printing, technical media design	0.096 (0.062)	0.097 (0.062)
Metal production and processing	0.022 (0.050)	0.022 (0.050)
Mechanical and automotive engineering	0.065 (0.053)	0.066 (0.054)
Electrical occupations	0.112* (0.064)	0.112* (0.064)
Occupations in technical development, production control	0.117** (0.058)	0.118** (0.058)
Occupations in textile industry	-0.121* (0.065)	-0.120* (0.065)
Food production and processing	0.065 (0.045)	0.066 (0.045)
Occupations in construction planning, architecture	0.257* (0.137)	0.264* (0.137)
Construction occupations	0.078* (0.046)	0.081* (0.046)
Interior construction occupations	0.078 (0.055)	0.079 (0.055)
Occupations in supply engineering, building	-0.004 (0.068)	-0.004 (0.069)
Occupations in biology, chemistry, physics, mathematics	0.168* (0.087)	0.168* (0.087)
Geology, geography, environmental occupations	0.341 (0.456)	0.330 (0.464)
IT occupations	-0.036 (0.086)	-0.033 (0.085)
Transport and logistics occupations	0.039 (0.043)	0.039 (0.043)
Driver	0.171*** (0.048)	0.173*** (0.048)
Personal security occupations	0.096* (0.057)	0.097* (0.057)
Cleaning occupations	0.076* (0.043)	0.078* (0.043)
Retail occupations	0.073 (0.066)	0.075 (0.065)
Sales occupations	0.120*** (0.045)	0.121*** (0.045)
Hotel/restaurant occupations, occupations in tourism	0.137*** (0.042)	0.137*** (0.042)
Management occupations	0.112***	0.115***

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
	(0.042)	(0.042)
Financial service occupations	0.289***	0.293***
	(0.079)	(0.079)
Occupation in law and administration	0.131	0.134
	(0.127)	(0.127)
Health care occupations	0.158***	0.159***
	(0.054)	(0.054)
Non-medical health care occupations	0.101**	0.102**
	(0.051)	(0.051)
Social occupations	0.175***	0.176***
	(0.040)	(0.040)
Instructing and teaching occupations	0.052	0.058
	(0.073)	(0.073)
Economics, social science, linguistics	0.218	0.215
	(0.153)	(0.153)
Occupations in advertising, marketing	0.074	0.074
	(0.058)	(0.058)
Product design	-0.077	-0.075
	(0.143)	(0.143)
Artistic occupations	0.003	0.003
	(0.079)	(0.079)
<i>Skill level last job</i>		
Missing	reference.	reference.
Unskilled	0.031	0.026
	(0.042)	(0.043)
Skilled	0.018	0.015
	(0.040)	(0.040)
Specialist	0.013	0.009
	(0.048)	(0.048)
<i>Status before (hypothetical) language training start</i>		
Missing	-0.198	-0.258*
	(0.151)	(0.153)
Other	0.140***	0.153***
	(0.023)	(0.023)
On parental leave, working as house-	-0.381***	-0.369***
wife/househusband	(0.038)	(0.038)
Marginal employment	0.395***	0.397***
	(0.010)	(0.010)
Job-seeking	0.026	0.016
	(0.024)	(0.025)
Unemployment benefit receipt	0.057**	0.053**
	(0.025)	(0.025)
Unemployment benefit II receipt	-0.049**	-0.051**
	(0.024)	(0.024)
ALMP measure	0.069***	0.072***
	(0.019)	(0.020)
Education, trainee	0.038	0.044
	(0.035)	(0.035)
Self-employment	-0.085	-0.079
	(0.068)	(0.068)
Employment subject to social security contri-	0.118***	0.122***
butions	(0.027)	(0.027)
Unemployment rate foreign-born	0.004	0.004
	(0.003)	(0.003)
Unemployment rate native-born	-0.017**	-0.017**
	(0.008)	(0.008)
Share of foreign-born among unemployed	-0.321	-0.287
	(0.202)	(0.202)
Share of foreign-born in labor force	0.558	0.522
	(0.391)	(0.390)
Share of women among foreign-born	0.268	0.258

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
	(0.278)	(0.277)
Share of foreign-born age 25-29	-0.159	-0.078
	(0.418)	(0.418)
Share of foreign-born age 30-34	0.664	0.713
	(0.456)	(0.457)
Share of foreign-born age 35-39	1.093***	1.136***
	(0.411)	(0.413)
Share of foreign-born age 40-44	0.637	0.666
	(0.467)	(0.469)
Share of foreign-born age 44-49	0.195	0.257
	(0.507)	(0.509)
Share of foreign-born age 50 and older	-0.835**	-0.788**
	(0.383)	(0.384)
Share of low-skilled among foreign-born	0.072	0.092
	(0.155)	(0.155)
Share of foreign-born from EU countries	-1.062***	-1.063***
	(0.392)	(0.393)
Share of foreign-born from Turkey	-1.295***	-1.295***
	(0.384)	(0.385)
Share of foreign-born from Russia	-1.504***	-1.479***
	(0.516)	(0.520)
Share of foreign-born from other European countries	-0.929**	-0.918**
	(0.400)	(0.401)
Share of foreign-born from North Africa	-1.231**	-1.247**
	(0.499)	(0.505)
Share of foreign-born from other African countries	-1.547***	-1.538***
	(0.576)	(0.577)
Share of foreign-born from Near/Middle East	-1.355***	-1.343***
	(0.403)	(0.404)
Share of foreign-born from other Asian countries	-0.800*	-0.784*
	(0.471)	(0.476)
Share of foreign-born from America, Australia	-1.360*	-1.423*
	(0.760)	(0.764)
Number of unemployed per vacancy	0.000	0.001
	(0.002)	(0.002)
Share of unemployed entering ALMP programs	0.213	0.233
	(0.219)	(0.216)
Share of working population in Agriculture and forestry	-0.973*	-0.940*
	(0.522)	(0.520)
Production industry	0.459	0.481
	(0.604)	(0.605)
Manufacturing	-0.577	-0.584
	(0.602)	(0.603)
Construction	-0.037	-0.025
	(0.427)	(0.423)
Trade, transport, catering industry	-0.110	-0.091
	(0.201)	(0.200)
Financial sector	0.040	0.045
	(0.139)	(0.140)
Public sector	-0.286**	-0.272**
	(0.133)	(0.131)
GDP per capita	-0.000	-0.000
	(0.000)	(0.000)
Population density	-0.000***	-0.000***
	(0.000)	(0.000)
Integration course in the past	0.132***	0.104***
	(0.013)	(0.018)
<i>Month in 2014 with (hypothetical) language training start</i>		
January	reference	reference
February	0.005	0.002
	(0.022)	(0.022)

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
March	0.032 (0.023)	0.023 (0.023)
April	0.037* (0.021)	0.032 (0.020)
May	0.049** (0.021)	0.050** (0.021)
June	0.037* (0.020)	0.036* (0.020)
July	0.068*** (0.022)	0.069*** (0.022)
August	0.076*** (0.022)	0.077*** (0.022)
September	0.058*** (0.022)	0.053** (0.021)
October	0.053** (0.021)	0.053** (0.022)
November	0.054*** (0.020)	0.054*** (0.020)
December	0.061*** (0.020)	0.061*** (0.020)
Language training	0.149*** (0.021)	0.297*** (0.058)
constant	0.107 (0.441)	0.070 (0.440)
		First stage (dependent variable: language training participation)
Male		-0.125*** (0.018)
Age		0.016*** (0.001)
Single parent		0.400*** (0.034)
Children		0.191*** (0.019)
<i>Duration since first observation in data (years)</i>		
<1		9.768*** (0.184)
1		1.342*** (0.051)
2		1.414*** (0.039)
3		1.260*** (0.039)
4		1.065*** (0.040)
5		0.985*** (0.045)
6		0.832*** (0.045)
7		0.693*** (0.043)
8		0.682*** (0.036)
9		0.627*** (0.037)
10		0.513*** (0.031)
11		0.515*** (0.038)

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
12		0.427*** (0.044)
13		0.449*** (0.042)
14		0.324*** (0.042)
15		0.241*** (0.043)
<i>Duration of current unemployment spell</i>		
<6 months		0.117** (0.048)
>=6months, <1 year		0.053 (0.044)
1-2 years		-0.007 (0.031)
2-5 years		-0.020 (0.028)
>5 years		reference
<i>Highest educational degree</i>		
No vocational degree		reference
German or unknown vocational degree		-0.133*** (0.029)
Higher secondary schooling degree		0.265*** (0.033)
Higher secondary schooling degree and German vocational degree		-0.049 (0.041)
German or unknown university degree		0.065 (0.047)
Vocational degree abroad		0.195*** (0.031)
University degree abroad		0.253*** (0.040)
<i>Schooling degree</i>		
No secondary degree		reference
Lower secondary degree		0.142*** (0.024)
Lower or middle secondary degree		-0.412*** (0.058)
Middle secondary degree		0.255*** (0.027)
Higher secondary degree (Fachhochschulreife)		0.228*** (0.041)
Higher secondary degree (Fachhochschulreife or Abitur)		0.073 (0.049)
Higher secondary degree (Abitur)		0.350*** (0.033)
<i>Region of origin</i>		
EU countries		reference
Turkey		-0.034 (0.025)
Russia		0.159*** (0.039)
Other European countries		-0.033 (0.031)
North Africa		0.019 (0.041)
Other African countries		0.279*** (0.034)
Near/Middle East		0.217*** (0.029)



	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Other Asian countries		0.189*** (0.038)
America, Australia		0.324*** (0.045)
<i>Federal state</i>		
Schleswig-Holstein		reference
Hamburg		-0.001 (0.210)
Lower Saxony		0.028 (0.102)
Bremen		-0.034 (0.129)
North-Rhine-Westphalia		-0.008 (0.098)
Hesse		-0.117 (0.116)
Rhineland-Palatinate		-0.233** (0.118)
Baden-Württemberg		-0.185 (0.125)
Bavaria		-0.187 (0.136)
Saarland		-0.136 (0.119)
Berlin		-0.201 (0.172)
Brandenburg		-0.345 (0.247)
Mecklenburg-Vorpommern		-0.369 (0.238)
Saxony		-0.236 (0.193)
Saxony-Anhalt		0.062 (0.165)
Thuringia		-0.235 (0.232)
<i>Marital status</i>		
Single		reference
Married, separated		0.832*** (0.102)
Married		-0.120*** (0.020)
Divorced		0.608*** (0.079)
Widowed		0.231 (0.182)
unknown		-0.160*** (0.030)
<i>Labor market history one year prior to (hypothetical) training start</i>		
Days in employment		-0.001*** (0.000)
Days in job search		-0.001*** (0.000)
Number of job search episodes		-0.048** (0.020)
Days in ALMP program		-0.000 (0.000)
Number of episodes in ALMP program		0.049 (0.057)
Days with unemployment benefit receipt		0.001*** (0.000)

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Days with unemployment benefit II receipt		0.002*** (0.000)
Days with sickness absence during unemployment		-0.005*** (0.001)
Number of episodes with unemployment benefit receipt		-0.027 (0.046)
Number of episodes with unemployment benefit II receipt		-0.028 (0.023)
Number of episodes with sickness absence during unemployment		0.063*** (0.023)
Mean wage		-0.003*** (0.001)
Cumulated wage		0.000*** (0.000)
Days in education		-0.001* (0.000)
Days in self-employment		0.001 (0.000)
Days in military/civilian service		-0.004 (0.004)
Days on parental leave, housewife/househusband		0.002*** (0.000)
Days in other measures		0.001 (0.000)
Days with non-professional activities		-0.000 (0.001)
Days with other status		-0.001*** (0.000)
Days in other measures		-0.115** (0.053)
Number of episodes of self-employment		-0.118 (0.090)
Number of episodes on parental leave, working as housewife/househusband		-0.334*** (0.055)
Number of episodes in other measures		0.142*** (0.049)
Days in employment outside Germany		-0.001*** (0.000)
<i>Labor market history five years prior to (hypothetical) training start</i>		
Days in employment		0.000* (0.000)
Days in job search		0.000 (0.000)
Number of job search episodes		0.060*** (0.009)
Days in ALMP program		-0.000 (0.000)
Number of episodes in ALMP program		0.025** (0.012)
Days with unemployment benefit receipt		0.000 (0.000)
Days with unemployment benefit II receipt		-0.000*** (0.000)
Days with sickness absence during unemployment		0.000 (0.000)
Number of episodes with unemployment benefit receipt		-0.039* (0.021)
Number of episodes with unemployment benefit II receipt		-0.114*** (0.012)
Number of episodes with sickness absence during unemployment		-0.051*** (0.011)

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
Mean wage		-0.001 (0.002)
Cumulated wage		0.000 (0.000)
Days in education		0.000*** (0.000)
Days in self-employment		0.000 (0.000)
Days in military/civilian service		0.000 (0.000)
Days on parental leave, housewife/househusband		0.000*** (0.000)
Days in other measures		0.000 (0.000)
Days with non-professional activities		-0.000* (0.000)
Days with other status		0.000*** (0.000)
Days in other measures		0.015 (0.024)
Number of episodes of self-employment		-0.034 (0.031)
Number of episodes on parental leave, working as housewife/househusband		-0.039 (0.026)
Number of episodes in other measures		0.069** (0.028)
Days in employment outside Germany		0.000*** (0.000)
<i>Last occupation</i>		
Missing		reference
Armed forces occupations		0.279 (0.414)
agricultural occupations, forestry		0.047 (0.143)
Occupations in horticulture floristry		-0.033 (0.091)
Occupations involving extraction/production of raw materials		0.089 (0.191)
Plastics and wood production and processing		0.010 (0.104)
Occupations in paper production and printing, technical media design		-0.072 (0.112)
Metal production and processing		0.035 (0.078)
Mechanical and automotive engineering		-0.116 (0.087)
Electrical occupations		0.113 (0.116)
Occupations in technical development, production control		0.120 (0.117)
Occupations in textile industry		-0.026 (0.112)
Food production and processing		0.147** (0.063)
Occupations in construction planning, architecture		-0.755** (0.376)
Construction occupations		-0.150** (0.076)
Interior construction occupations		-0.051 (0.108)
Occupations in supply engineering, building		0.061

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
		(0.130)
Occupations in biology, chemistry, physics, mathematics	0.082	(0.168)
Geology, geography, environmental occupations	0.733	(0.599)
IT occupations	-0.234	(0.171)
Transport and logistics occupations	0.072	(0.066)
Driver	-0.122	(0.075)
Personal security occupations	-0.013	(0.095)
Cleaning occupations	0.014	(0.066)
Retail occupations	0.006	(0.110)
Sales occupations	-0.007	(0.073)
Hotel/restaurant occupations, occupations in tourism	0.145**	(0.065)
Management occupations	-0.065	(0.076)
Financial service occupations	-0.214	(0.170)
Occupation in law and administration	-0.143	(0.228)
Health care occupations	-0.033	(0.087)
Non-medical health care occupations	-0.044	(0.112)
Social occupations	0.057	(0.066)
Instructing and teaching occupations	-0.154	(0.141)
Economics, social science, linguistics	0.245	(0.239)
Occupations in advertising, marketing	0.047	(0.122)
Product design	-0.038	(0.324)
Artistic occupations	0.277***	(0.092)
<i>Skill level last job</i>		
Missing	reference	
Unskilled	0.248***	(0.064)
Skilled	0.059	(0.058)
Specialist	0.183**	(0.085)
<i>Status before (hypothetical) language training start</i>		
Missing	3.049***	(0.218)
Other	-0.538***	(0.040)
On parental leave, working as housewife/househusband	-0.886***	(0.067)
Marginal employment	-0.129***	(0.020)
Job-seeking	1.006***	

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
		(0.097)
Unemployment benefit receipt		0.296***
		(0.043)
Unemployment benefit II receipt		0.251***
		(0.047)
ALMP measure		-0.207
		(0.151)
Education, trainee		-0.549***
		(0.074)
Self-employment		-0.576***
		(0.121)
Employment subject to social security contributions		-0.365***
		(0.066)
Unemployment rate foreign-born		0.009
		(0.011)
Unemployment rate native-born		-0.017
		(0.028)
Share of foreign-born among unemployed		-0.988
		(0.761)
Share of foreign-born in labor force		2.310
		(1.521)
Share of women among foreign-born		-1.114
		(0.782)
Share of foreign-born age 25-29		-0.525
		(1.247)
Share of foreign-born age 30-34		-1.758
		(1.433)
Share of foreign-born age 35-39		-2.426*
		(1.417)
Share of foreign-born age 40-44		-3.269**
		(1.594)
Share of foreign-born age 44-49		-1.738
		(1.555)
Share of foreign-born age 50 and older		-0.150
		(1.209)
Share of low-skilled among foreign-born		-1.213***
		(0.461)
Share of foreign-born from EU countries		-8.357
		(5.200)
Share of foreign-born from Turkey		-8.323
		(5.192)
Share of foreign-born from Russia		-9.631*
		(5.231)
Share of foreign-born from other European countries		-8.168
		(5.249)
Share of foreign-born from North Africa		-8.193
		(5.144)
Share of foreign-born from other African countries		-7.906
		(5.636)
Share of foreign-born from Near/Middle East		-9.038*
		(5.238)
Share of foreign-born from other Asian countries		-10.447**
		(5.094)
Share of foreign-born from America, Australia		-5.266
		(4.878)
Number of unemployed per vacancy		0.009
		(0.010)
Share of unemployed entering ALMP programs		-1.962**
		(0.772)
<i>Share of working population in</i>		
Agriculture and forestry		-1.380

	Probit	Bivariate probit
Dependent variable: employment after 24 months		
		(1.748)
Production industry	2.166	(1.951)
Manufacturing	-1.748	(1.925)
Construction	-2.134*	(1.105)
Trade, transport, catering industry	0.583	(0.623)
Financial sector	-0.386	(0.480)
Public sector	-0.324	(0.360)
GDP per capita	-0.000	(0.000)
Population density	0.000	(0.000)
Integration course in the past	1.037***	(0.027)
<i>Month in 2014 with (hypothetical) language training start</i>		
January		reference
February		0.233***
		(0.071)
March		0.471***
		(0.063)
April		0.310***
		(0.054)
May		-0.104
		(0.075)
June		0.058
		(0.052)
July		-0.094
		(0.063)
August		-0.121*
		(0.066)
September		0.324***
		(0.058)
October		0.002
		(0.062)
November		-0.015
		(0.063)
December		-0.037
		(0.060)
Local language training intensity		15.697***
		(1.134)
Constant	5.706	(5.386)

Source: IEB V12.01.00, WGH V01.01.00-201604; Statistic of the German Federal Employment Agency; German Federal Statistical Office. \*\*\*/\*\*\* indicate significant marginal effects on the 10%/5%/1% level. Standard errors in parenthesis, clustered at the job center level.

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