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The Labor Market Integration of Refugees and other Migrants in Germany*

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Abstract

Using the panel data from 1995 to 2019, this paper investigates the labor market integration of non-EU immigrants in Germany. The existing evidence shows that the economic outcomes of migrants are far behind natives. However, immigrants are a heterogeneous group in terms of their motives for migration and skills composition. In this paper, I disentangle immigrants into refugees and other migrants and compare the employment probability gap between refugees, other migrants, and natives. I also examine whether refugees have a lower employment outcome than other migrants. The result confirms that refugees and other migrants are less likely to be employed than natives and the employment gap is much higher for refugees. I also find evidence of heterogeneity across gender. Other migrant men do not significantly differ from native men in the probability of being employed. In contrast, refugee women have an economic disadvantage than other migrant women and native women. I find no evidence that health status differences attribute to the employment gap between refugees, other migrants, and natives. Finally, this paper highlights the importance of the migration category when assessing the integration of immigrants into the labor market.

JEL Classifications: J15; J21; J61; F22

Keywords: Employment, Refugees, other Migrants, Labor Market, Integration

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1 Introduction

The employment outcome of immigrants is a key indicator of successful integration of migrants into the destination country and plays a significant role in contributing to the economy through social contribution, taxation and less dependence on welfare benefit (Dustmann & Frattini, 2014; Hinte & Zimmermann, 2014), improvement of social networks, and adjustment in the host country (Hansen, 2012). In the same vein, immigrants may fill the shortage of labor that arise due to aging population and low fertility rate. Hence, the integration of immigrants into the labor market is essential not only for immigrants but also for the German economy. For a successful integration of immigrants, it is important to understand what determines their employment outcome. Extensive literature suggests that the labor market situation of immigrants is far behind than natives (Borjas 1988; Büchel & Frick, 2005; Reyneri & Fullin, 2011). Yet, immigrants are a heterogeneous group in terms of skills compositions, and motive for migration that may affect their economic integration into the labor market. Therefore, migration categories are important for the integration of migrants in the labor market (Salikutluk et al., 2016; Bevelander et al.,2016). This means that when a person immigrates for employment or study purposes is not the same as asylum seeking migrants. The latter group might not be prepared in advance to fit the employer requirement at the destination country. Consequently, asylum seekers and refugees are less likely to integrate into the labor market than other migrants.

This paper examines the labor market integration of immigrants from non-EU countries, mainly from Africa, the Middle- East, Asia, and West Balkans countries, who entered Germany between 1995 and 2019 using the German Socio-Economic Panel data (SOEP). For Germany, a large number of studies deals with the wage gap between immigrants and natives. (See, for example, Chiswick, 1978; Clark & Lindley, 2006; Adsera & Chiswick, 2007; Aeberhardt & Pouget 2010; Aldashev et al.,2012; Constant & Massey,2003). So far, Algan et al. (2010), Kanas et al.(2011), Euwals et al. (2007) and Aldashev et al. (2009)) document the employment gap between immigrants and natives in Germany. This paper contributes to the existing literature on the labor market performance of immigrants by looking into the employment probability gap between immigrants and natives. More specifically, I distinguish immigrants by migration category into refugees and other migrants (non-refugee) to account for heterogeneity. The growing studies that look at integration of refugees at European level find that refugees have a lower employment rate than other migrants (see, Dumont et al., 2016; Fasani et al., 2020b; Brell et al., 2020). This paper is closely related to studies that have analyzed the economic integration of refugees and other migrants at the national level. Among those, four recent studies investigated the employment outcome of refugees compared to other migrants using the data from Germany, Salikutluk et al. (2016), Degler et al.

(2017), Kogan, (2011) and Brücker et al. (2019) show that it took longer for refugees to find gainful employment than other migrants. Similarly, for Sweden, Bevelander (2011) and for UK Ruiz, and Vargas-Silva (2018) find that refugees have a lower employment probability than other migrants and natives.

I aim to complement those studies by providing evidence on labor market integration not only for recent refugees and migrants but also for those who stayed in the country for a longer period using a representative sample from Germany. In doing so, I examine whether being a refugee has a lower employment probability than other migrants and to what extent the level of education, language proficiency, health status, years since migration and cohort effect explains the employment gap between the refugees and other migrants. Further, I provide heterogeneity analysis by gender and level of education.

The result reveals that refugees are less likely to find employment than other migrants and natives. The conditional employment probability gap between native and refugee is 23 percentage points, while this gap is only 5 percentage points for other migrants. Moreover, the study find that there is no significant difference between other migrant male and native male in the likelihood of being employed. In contrast, female immigrants (refugees and other migrants) show difficulties finding employment compared to female natives. After controlling for years since migration, health status, countries of origin, and cohort effects, refugees are 7 percentage points less likely to find employment than other migrants. The results are robust across different specifications and in line with previous findings on the labor market outcome of refugees and other migrants.

There are several reasons why the labor market outcome of refugees differs from other migrants. Generally, refugees face more difficulties in finding jobs than other migrants and natives (Salikutluk et al., 2016; Zwysen, 2019; Bevelander et al , 2016; Chin & Cortes, 2015; Brell et al., 2020; Brücker et al., 2019). Three factors might account for the disparity in employment between refugees and other migrants. First, refugees may not be economically selected to the same degree as other migrants (Constant & Zimmermann, 2005; Dustmann et al., 2017; Bevelander et al , 2016; Fasani et al., 2020b; Brücker et al.,2015). At least in principle, refugees do not choose when and where to migrate until migration occurs because the motivation to migrate is mainly driven by political persecution and human right violation in the home country. Hence, refugees arrive in the destination country with less transferable human capital, such as language and schooling, than other migrants do. Second, asylum seekers have legal restrictions to access the labor market during the asylum seeker application. The legal status of refugees affects the integration by influencing human capital investment, such as acquiring language that is crucial for successful integration into the labor market (Cheswick & Miller, 1995).

Besides, the length of asylum procedures may result in a devaluation of human

capital and skills (Kosyakova & Brenzel , 2020) Hence, this period of inactivity may have an adverse effect on the recognition of qualification that enables refugees to transfer their skills into the host country labor market(Chin, 2005). Accordingly, the longer asylum process is likely to delay integration into the labor market. Third, refugees experience post-migration trauma and health problems (Brell et al., 2020; Kosyakova & Brenzel , 2020; Philipp & Kosyakova ,2021). The traumatic political persecution in the home countries, the experience of the journey to reach the destination countries and the uncertain situation in the refugee camp in the host countries may affect the health status of refugees. As a result, refugees have a lower employment probability than other migrants and natives population.

Against the above argument, evidence mainly from the US suggests that the labor market integration of refugees does not differ from other migrants. In fact, refugees might have better employment outcomes than other migrants because refugees often come from countries that are affected by human rights violations and civil war. So, refugees are more likely to stay in the host country in the long term (Brücker et al., 2019). The smaller the probability of return to the home country, the higher the incentive to invest in human capital that is important for the host country (Cortes, 2004). As a result, refugees could perform better than other migrants over time.

The remaining sections of the paper is structured as follows: Section 2 provides a brief history of immigration to Germany. Section 3 presents the previous empirical evidence of the labor market outcome of refugees and other migrants by focusing on factors that might influence the employment outcome of immigrants; Section 4 describes the data set and methodology. Section 5 presents descriptive evidence. Section 6 presents the empirical result from the average marginal effect computed after random effects probit estimation. It also present a result from robustness check using various strategies. Finally, Section 7 presents the concluding remarks of the paper.

2 Immigration in Germany

As of 2019, 21.2 million people living in Germany are either immigrants or their descendants (Destatis, 2020). After World War II, the immigration inflow was mainly from its former eastern territories including ethnic Germans. (Schmidt & Zimmermann, 1992). Then around 1950, due to the rapid economic growth and the shortage of low-skilled workers in Germany, the government recruited foreign workers from the so-called " guest-worker" countries such as Italy, Spain, Greece, Turkey, Portugal, and Morocco to work as semi or unskilled blue-collar workers. During this period immigration were temporary where residence permits were limited to a maximum of two years, and foreigners were

expected to return to their home country after the two years (Münz & Ulrich, 1997). The German Democratic Republic also experienced a shortage of labor due to emigration to the West of Germany that resulted in the recruitment of foreign workers mainly from socialist countries such as Hungary, followed by Algeria, Vietnam, Poland, Mozambique, and Cuba. During these period, migrant integration in the labor market and into society was limited. Yet, in the past two decades, with the unification of the two German States in 1990, the pattern of immigration changed. The inflow of immigration mainly increased from Central, Eastern, and Southern European countries. After the expansion of the European Union (EU) in 2004, immigrants from new member states significantly increased despite restricted access to the labor markets for individuals from the new member state countries (Elsner & Zimmermann, 2016).

Although Turkish community are the largest migrants group in Germany, immigration[1] from outside Europe was relatively low. Recently, the government adopted new immigration laws to promote the inflow of skilled immigration to fill the shortage of workers that arises due to an aging population and low fertility rate. In 2005, the new immigration law was implemented to allow non-EU nationals wishing to find employment in Germany to obtain a visa for up to six months subject to certain conditions[2]. Also in 2012, the European Blue Card[3] legislation came into effect in Germany to attract highly-skilled non-EU nationals to fill the occupation with a shortage of skilled labor; special attention is given to migrants with a particular specialization such as technology, engineers. Thus, immigrants from India, China, and West Balkan countries (Bosnia-Herzegovina, Kosovo, Serbia, Macedonia, and Albania) are the central origin countries for skilled immigrants coming from areas outside of the EU (Mayer, 2018).

Despite the introduction of a laws to attract skilled immigrants from outside European Union member states, over the past few years, the majority of immigrants were from European countries, especially from EU member states. Except in 2015, where Germany received a large number of refugees and asylum seekers who have had to leave the home country because of civil war from non- EU countries. In addition to the inflow of refugees, the number of international migrants outside European countries has increased significantly. In general, the recent inflow of immigration indicates that both the size of the migrant population and the composition of origin countries changed. Immigrants

[1]The European Union defines immigration as the action by which a person from a non-EU country establishes his or her usual residence in the territory of an EU country for a period that is or is expected to be at least twelve months

[2]some of the requirements are proof of completed German University /vocational training or University degree obtained abroad, which are equivalent to qualified German vocational training, proof of income secured for the duration of stay and proof of German language skills that correspond to the potential occupation

[3]For the EU-Blue card, the applicant should prove that a university degree and a job offer that could provide a gross annual income of at least a minimum income of 55,200 euros.

from traditional sending countries such as Turkey are no longer the primary source of migrants in Germany.

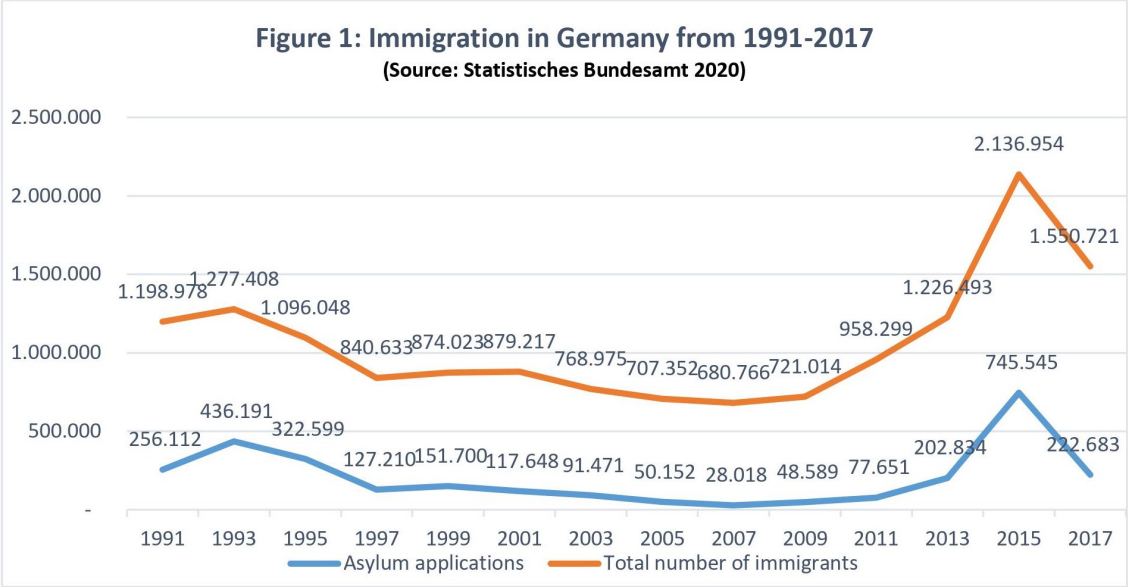


Figure 1: Immigration flows in Germany

As shown in figure 1, during the last two decades asylum seekers were low compared to the total migrant population. However, in 2015, 890,000-asylum applications (BAMF, 2016; BMI, 2016) submitted which is a peak number over the past two decades. In 2018 around a 1.8million, people have a refugee background[4] in Germany compared to 744,000 in the year 2014 and the principal asylum seeker-sending countries are Syria, Afghanistan, Iraq, Iran and Eritrea (Brücker et al., 2019).

3 Previous Studies

The literature on the labor market outcomes of immigrants received significant attention after the seminal work of Chiswick (1978) and Borjas (1985), who analyzed the assimilation of immigrants in the US, while Kahanec, Zaiceva, & Zimmermann (2011) focused on the labor market outcome of immigrants in the European labour market. This section focuses on the employment gap between immigrants and natives in general and refugees' employment outcomes in particular. Researchers paid attention to investigate the economic integration of refugees very recently following the inflow of recent asylum seekers in most European countries. Salikutluk et al.(2016) examine the labor market outcome of

[4]Refugee background refers to those who have been approved asylum applications and granted protection refers to those individuals who submitted an asylum application but not yet received a decision.

refugees and other migrants who arrived in Germany between 1990 and 2010 using data from the Socio-Economic Panel (SOEP) and the IAB-SOEP Migration Sample. Their finding suggests that it has taken longer for refugees to take up gainful employment compared to other migrants, even for those refugees who have been living in Germany for some time. Similarly, Brücker et al.(2014) employ the IAB-SOEP Migration Sample[5] that includes information on educational attainment and employment history of immigrants before moving to Germany and find that refugees have lower employment and earning performance than other migrants.

The study from other European countries also suggests that migrants, in general, have lower employment outcomes than native population and, refugees, in particular, have worse labor market outcomes than other migrants and comparable natives. As such, Dumont et al. (2016) provide a first evaluation of refugees and other migrants who were born in non-EU countries and migrated to European countries and their performance in the labor market.The author argues that on average, it takes up to 20 years for refugees to have similar employment likelihood as natives. The author also find refugees have lower employment rate than other non EU migrants and a significant part of employment rate difference between refugees and other migrants might be explained by difference in education level. Brell, Dustmann & Preston (2020)[6] use European level data to analyze the integration of refugees and other migrants in high-income countries and find that while there is heterogeneity between countries, refugees experience worse outcomes than other migrants are and natives. Similarly, Fasani et al. (2018), using the labor force survey for 20 European countries, analyzed the employment outcome of refugees, other migrants, and natives and revealed that refugees are less likely to find employment than other migrants and natives. Using a labor force survey for the UK, Ruiz, and Vargas-Silva (2018) confirmed the result of Fasani et al. (2018) finding that refugees are less likely to find employment than other migrants and UK-born individuals. For Sweden, Luik, Emilsson & Bevelander (2016) document that the employment rate of refugees is 34 percentage points lower than that of natives, while the employment rate of other migrants is only 14 percentage points lower than that of natives. Most previous studies suggest that host country language proficiency improves the performance of refugees and other migrants in the labor market.

For example, For Germany, Aldashev et al. (2009),Dustmann (1994), and Brücker et al. (2015) show that language skill improves the labor market performance of immigrants. Brell et al. (2020) confirm that language skills partially explain the em-

[5]IAB-SOEP data organized by in cooperation with the Institute for Employment Research (IAB) the Socio-Economic Panel (SOEP). The data paid special focus on migrants from Poland, Romania, Turkey, the former Yugoslavia, Italy, Spain, and Greece, and Arab countries.

[6]The authors used IAB-SOEP-BAMF refugee data for Germany which surveyed asylum seekers and refugees who arrived since 2013

ployment gap between refugees and natives, and other migrants, and the gap is narrowed after living in the host country for over a decade. For the UK, Dustmann & Fabbri (2003) and Shields & Price (2001)find that English fluency is associated with a 15-17 percentage point and 20 to 25-percentage points higher employment probability of immigrants in the UK. Similarly, Ruiz, & Vargas-Silva (2018) and Fasani et al.(2018) argue that lower English proficiency partially explains why refugees have a lower employment rate than other migrants. Other studies also find that country of origin (Algan et al. (2010), and years since migration (Borjas, 1989) determine the employment performance of immigrants.

However, the challenge one faces when analyzing the performance of immigrants in the labor market is that the standard human capital theory is not straightforward, which means that the human capital obtained from the home country and in the host country are not the same. In particular, education acquired in the home country is not portable across countries. For instance, Friedberg (2000), using an Israeli Census of Population and Housing data for 1972 and 1983, argues that human capital acquired from the country of origin is valued less in the host country labor market. She finds that the native-immigrant wage gap is partially explained due to the difference in the quality of education. The author highlights that the quality of education and the extent of skills transferable are essential components for the performance of immigrants in the host country labor market. Likewise, using the German Socio-Economic Panel data, Basilio, Bauer & Kramer (2017) suggest that human capital obtained outside of Germany receives significantly lower returns than education and labor market experience acquired in Germany. Using Norwegian data, Hardoy & Schøne (2014) also find that 60 percent of the employment gap between natives and immigrants explained by education obtained in the home country. Chiswick et al. (2005) and Chiswick & Miller (2007) argue that host country language proficiency, labor market information, and work culture are the critical skills that improve the labor market outcome of immigrants in the host country.

Against the above evidence, the study from the US shows that refugees do not statistically differ from other migrants in the likelihood of employment. For instance, Chin & Cortes (2015), using New Immigrant Survey for the year 2003, argue that upon arrival in the US, refugees invest more time to acquire human capital that is specific to the labor market, and as a result, they have lower employment probability. Nevertheless, once schooling is completed, refugees have a higher employment probability and earning than other migrants. This result is consistent with Connor (2010), who argues that the employment rates are the same for refugees and as for other migrant groups in the US.

4 Data and Methodology

4.1 The German Socio-Economic Panel (GSOEP)

The data stems from the German Socio-Economic Panel (SOEP), a large representative household panel survey that collects information from over 22,000 individuals in approximately 12,000 households in Germany annually (Wagner et al.,2007). The empirical examination is based on the waves from 1995 to 2019 as these waves provide information relevant for empirical estimation. The SOEP data provides information about immigrant socio-demographic factors and their descendants in Germany, such as, the place of birth, year of arrival, employment status upon arrival, and migration category. It also provides information on immigrant characteristics before migration takes place, such as vocational degree attainment. In addition to the standard SOEP sample, the study utilizes IAB-BAMF-SOEP refugee survey, a longtudinal survey of refugees in Germany carried out jointly by the German Socio-Economic Panel(SOEP), Institute for Employment Research(IAB) and Asylum of the Federal Office for Migration and Refugees (BAMF) (Brücker et al., 2017). The survey provide information about refugees who arrived since 2013 and the first waves took place in 2016. The sample is restricted to a person between the age of 16 and 65 who lives in East and Western part of Germany. The data has an unbalanced panel structure, so the unit of observation is person-year. The sample size is 166,089 person-year that consist of 143,589 for natives, 12,625 for refugees, and 9,875 person-year for other migrants.

The outcome variable is a binary variable that takes a value of 1 if a person is employed in either full-time or part-time employment and a value of 0 if a person is observed unemployed and looking for a job. I omit individuals who are still in school, in retirement, on maternity leave, in marginal employment and vocational training program and anyone who did not answer the question on the country of birth and year of immigration. Since the characteristics and the preference of self-employed people differ from paid employment, I drop self-employed individuals. The main interest of the explanatory variable is migration status. A binary variable takes value 1 if an individual is observed as either refugee or other migrant, and value 0 if a respondent is a German. Moreover, the immigrant sample is limited to a person who migrated to Germany between 1995 and 2019 from non-EU countries[7] countries and lived in Germany for at least one year. In this analysis, refugees are defined as foreign individuals born in one of the non-EU countries and have a direct refugee or asylum seeker experience, and other migrants are foreign-born individuals with no direct asylum seeker experience in Germany. Since immigrants are identified by country of birth, the variables remain constant over the observation period.

[7]See the list of countries in appendix A

Natives are German citizens born in Germany with no migration background.

Language proficiency is measured as self-reported language skills on five-scale points from very bad to very good. Chiswick & Miller (2015) suggest that a binary language indicator reduces the gravity of the misclassification error from self-reported information. The five categories of German language skills were collapsed into a dummy variable that takes a value of 1 if a person responds is a good or excellent proficiency in German writing and value 0 for very bad in German writing proficiency. I use only a German-writing skill variable because speaking and writing skills might be highly correlated. Dustmann (1994) argue that an immigrant who is proficient in writing German should be fluent in spoken German. Moreover, education measures according to the International Standard Classification of Education (ISCED-1997), the highest diploma classification. ISCED-5 and ISCED-6 are defined as "High Education", ISCED-3, and ISCED-4 as "Medium Education", ISCED-1, and ISCED-2 as "Low Education". Low education is the base category. Furthermore, a vocational degree from the home country is measured as a dummy variable that takes value 1 if a migrant has a vocational degree from the home country, and the value is equal to zero if the migrant did not have a vocational degree from their home country. Following Brell et al. (2020) and Ruiz, and Vargas-Silva (2018), a dummy variable for health status is included in the regression. Besides, for estimation using the sub sample of immigrants group, years since migration and dummy for recent immigrants who arrived after 2013 used as proxies to measure knowledge of the domestic labor market. Furthermore, a set of covariates is included in the regression analysis such as age, gender, and marital status, children in the household, work experience, a dummy for federal states, and survey years.

4.2 Emprical Strategy

A random-effects probit model is applied to estimate the employment probability gap between the groups as it accounts for the cross-period correlation of the error terms that influence the probability of employment and to enables to control for unobserved heterogeneity when it's not correlated with the explanatory variable and constant over time.
The typical probit model can be motivated along with latent variable:

$$Pr(E_{it} = 1|x_i) = \phi\beta_1 R_i + \beta_2 M_i + \beta_3 V_i + \beta_4 L_i t + \beta_5 X_i t + Co_i + \mu_s + \gamma_t + \epsilon_i \quad (1)$$

Where, $E_i t$ is a binary outcome variable (yes = 1; no = 0) for employment status of an individual.R_i and M_i are dummy variables of refugees and other migrants. $V_i t$, indicates a dummy for a vocational degree obtained from a country of origin. $L_i t$ is a dummy variable for very good or good German writing proficiency. $H_i t$ is the health

status, a binary variable that takes value 1 if the immigrants have bad health status. $X_i t$ is being the vector for all observed variables common to natives and immigrants. Co_i, μ_s and γ_t are dummies for a country of origin, federal states, and survey years, respectively. $\phi()$ is the CDF of the standard normal distribution for the random probit model. The error term is normally distributed $\epsilon \approx N(0,1)$, and the standard error clustered at an individual level to allow for correlation across a person.

In the next step, the sample is limited to migrants only and estimates the following specification.

$$Pr(E_{it} = 1|x_i) = \phi\beta_1 R_i + \beta_2 V_i + \beta_3 L_i + \beta_4 Y_i t + \beta_5 C_i t + \beta_6 X_i t + Coo_i + \mu_s + \gamma_t + \epsilon_i \quad (2)$$

In this case, I include additional control variables to explore the employment probability difference between refugees and other migrants. Therefore, $Y_i t$ is years since migration and $C_i t$ is a dummy variable for recent migrants inflow, it is a cohort effect to test whether immigrants who arrived after 2013 have different employment outcome than immigrants arrived between the year 1995 and 2013.

5 Descriptive Evidence

Table (1) shows the descriptive statistics for natives, refugees and other migrant. The age composition shows that refugees are younger than other migrants and natives. Concerning gender composition, 54 percent of other migrants are female compare to 41 percent of refugees, the distribution of females are also over-represented males for German. while only 43 percent of natives have children under the age of 16 in the household, 72 percent of refugees and 60 percent of other migrants have children in the household. The general health status are similar across immigrants group and natives. The educational attainment level shows that refugees are over-represented in low level(general elementary and middle school) education attainment with 56 percent, only 24 percent of other migrants and 7 percent of natives have shown lower level of education. Similarly, 24 percent and 20 percent of refugees have medium(high school and upper secondary) and high (University) education level. Almost 50 percent of other migrants and 60 percent of Germans have medium education level. Similarly, 26 percent of other migrants and 32 percent of Germans have high education level according to International Standard Classification of Education.

The summary statistics also report the heterogeneity among the immigrant groups. For instance, around 73 percent of other migrants respond that they can write very good German, compared to 35 percent of refugees. Likewise, 49 percent of other migrants obtained vocational education from home country, compared to 29 percent of

Table 1: **Mean characteristics**

	Natives		Refugees		other Migrants	
	Mean	SD	Mean	SD	Mean	SD
Employed	0.79	0.409	0.19	0.389	0.65	0.475
Age	45.4	10.98	35.3	10.51	39.9	10.46
Female	0.52	0.499	0.41	0.493	0.54	0.498
Married	0.655	0.468	0.701	0.455	0.808	0.387
Children	0.422	0.495	0.724	0.442	0.606	0.4839
High Education	0.319	0.467	0.195	0.398	0.261	0.437
Medium Education	0.609	0.490	0.242	0.433	0.499	0.500
Low education	0.071	0.266	0.562	0.497	0.237	0.427
Full time work experience	15.8	11.82	7.8	9.57	11	10.66
Part-time work experience	3.5	6.38	1.1	3.31	1.9	3.64
unemployment experience	0.64	2.05	1.4	2.851	1.2	2.552
Health status	0.147	0.351	0.134	0.353	0.151	0.353
Vocational degree abroad			0.286	0.4541	0.495	0.499
German writing skill			0.364	0.4773	0.734	0.4384
Years since migration			4.7	5.349	12.6	5.289
Arrived after 2013			0.743	0.478	0.023	0.0015
Africa			0.027	0.2487	0.062	0.362
Asia			0.012	0.319	0.17	0.377
Middle East			0.697	0.470	0.0246	0.1434
West Balkan			0.085	0.316	0.357	0.4770
Post-Soviet Area			0.117	0.1799	0.365	0.4815

Note: All variables except age, work experience, and years since immigration are mean dummy variables and can be interpreted in percentages.

refugees who obtained vocational degree from home country before immigration. On average, other migrants lived in Germany for almost 13 years, while refugees have only 4.7 years since migration in Germany. The continent of origin shows that the majority of immigrants are from Middle East countries, followed by West Balkan and Post Soviet countries. Immigrants from Asia and Africa account for the smaller share of immigrants in the sample, with 14 percent and 6 percent, respectively.

6 Main Result

6.1 Employment probability gap between natives, refugees and other migrants

The empirical analysis uses the random effects probit model to allow the estimation of time constant variables. This is particularly important for this study because the key explanatory variables are constant over time. Since the estimated coefficient from random effects tells only the sign of the coefficient, not the magnitude, I use an average marginal effects that provides the change in the predicted probability of employment as a result of an increase of one unit of the relevant variable, holding all other variables at their

respective means, reported in the regression table.

Table 2: The employment probability gap between refugees, other migrants and natives.

	(1)	(2)	(3)	(4)	(5)	(6)
Refugee	-0.534***	-0.531***	-0.546***	-0.502***	-0.407***	-0.229***
	(0.00605)	(0.00606)	(0.00641)	(0.00717)	(0.00763)	(0.0263)
Other Migrant	-0.124***	-0.123***	-0.145***	-0.123***	-0.061**	-0.0561**
	(0.00572)	(0.00569)	(0.00637)	(0.00655)	(0.0065)	(0.0259)
Health status		-0.0477***	-0.0476***	-0.0482***	-0.0442***	-0.0452***
		(0.00256)	(0.00256)	(0.00258)	(0.00249)	(0.00249)
COO-degree			0.0466***	0.0410***	-0.0586***	-0.0609***
			(0.00625)	(0.00621)	(0.00643)	(0.00637)
Good German writing				0.0643***	0.0494***	0.0463***
				(0.00460)	(0.00433)	(0.00440)
Medium education					0.113***	0.109***
					(0.0048)	(0.00484)
High education					0.215***	0.215***
					(0.00566)	(0.00569)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country of origin dummy	No	No	No	No	No	Yes
Fed. State dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Log pseudolikelihood	-43488.583	-43241.868	-43213.569	-43107.023	-42298.113	-41948.27
Wald chi2	5128.07	5463.76	5445.43	5738.44	5882.63	6071.91
Observations	166,089	166,089	166,089	166,089	166,089	166,089
Number of person	33,621	33,621	33,621	33,621	33,621	33,621

Note: The table shows the estimated coefficients. Z-statistics are in parentheses. The standard errors are clustered by a person. The marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects for continuous variables calculated at a mean of an explanatory variable. Native Germans, low education, no vocational degree, intermediate or bad German writing skill are the base categories in the regression *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table (2) presents the baseline estimation for the employment probability difference between refugees, other migrants, and natives. The specification of column (1) includes a dummy for being refugees, being other migrants and sociodemographic factors.[8]. In all models, I include survey year dummies to capture country level employment shock that affect all individual simultaneously and NUTS-1 regional dummies to control for time-invariant variation in employment probability caused by factors that vary across federal states. Column (2) control for the health status of individuals to see whether having a very bad health status influences the employment probability and whether it explains the employment likelihood gap between natives and the two immigrant groups. The result shows that having bad health status reduces the employment probability by around 4.7 percentage points, but there is no evidence that immigrant health status explains their lower employment outcome in the labor market. The magnitude of marginal effects remains unchanged (see the change from column 1 to column 2). In column (3), the specification further includes a dummy for a home country vocational degree.

As shown in columns (3), having a vocational degree from a country of origin increases the employment probability by about 4.6 percentage points than migrants who do not have a vocational degree from the home country. However, the initial positive influence of vocational degree on employment probability become negative and significant when formal education level included in the regression. This might indicate that formal education is more important than vocational education from home country for labor market outcomes of immigrant in destination country. This might be because the vocational degree obtained from non-EU countries are different from the vocational degree in Germany. This result is consistent with the previous studies that shows the non-transferability of home country education. For example, Friedberg (2000) and Colic-Peisker & Tilbury (2006) find the adverse influence of pre-immigration education on the labor market outcome of immigrants. However, it is important to note that initially home country education is positively correlated with the probability of being employed in destination country.

Column (4) present the result after controlling for the German language proficiency. It confirms that proficiency in German writing skills increases the probability of being employed by 6 percentage points, and the coefficient of marginal effects for being a refugee and other migrants changed. The result implies that host country language skills significantly explain the employment outcome of refugees and other migrants in Germany. This is consistent with previous studies looking at the labor market outcomes of immigrants. For example, (Chiswick et al., 2004; Dustmann, 1994; Aldashev et al.,2009; Yao

[8]this includes: age and age square of individuals, dummy for female, married, children in the household, work experience and unemployed experience

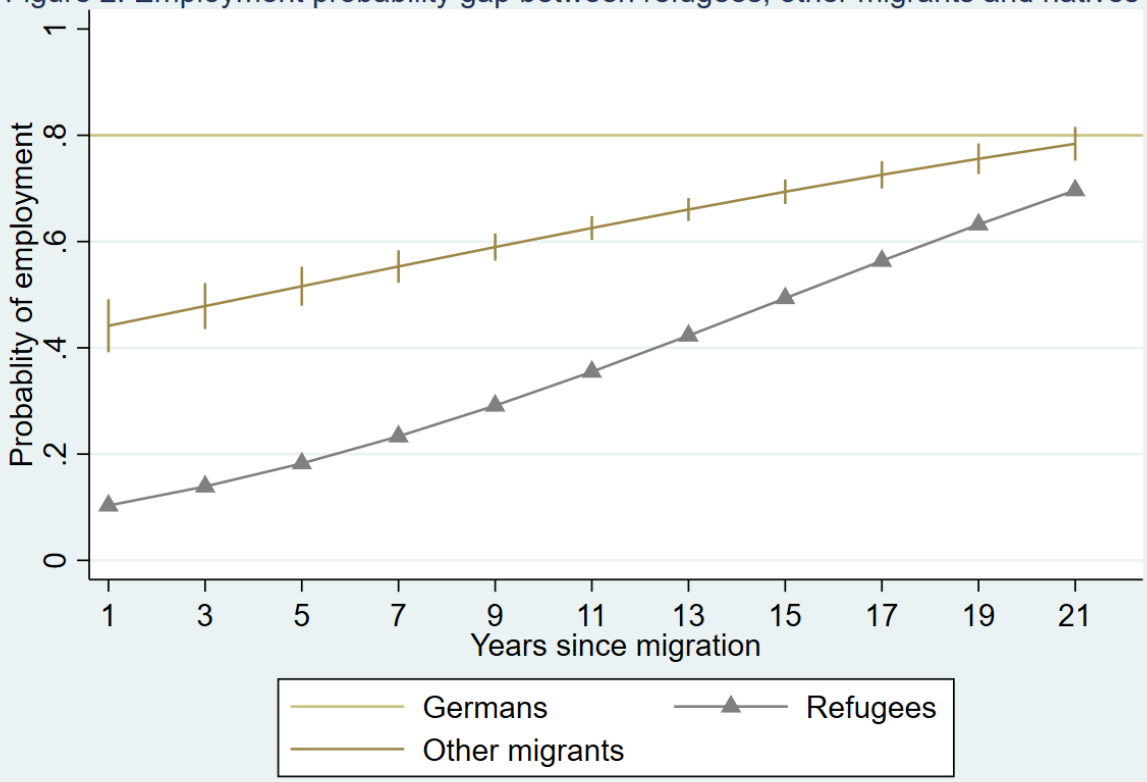
& van Ours, 2015; Dustmann & Fabbri, 2003) suggest that language skills improve the labor market performance of immigrants. In column (5), the specification includes the formal educational attainment to understand more whether the accumulation of education narrows the employment probability gap between immigrants group and natives. Hence, compared to low education, medium, and high education increase the likelihood of employment by 11 and 21 percentage points respectively. Also the magnitude of the coefficient for being a refugee and other migrant significantly changed (see the change from column 4 to column 5, Table 2). This means that the employment probability gap between refugees and natives as well as between other migrants and natives partially explained by the difference in educational attainment level.

Finally, in column (6), dummies for the list of origin countries are included in the estimation to see whether countries of origin explain the employment gap between refugees, other migrants, and natives. The result shows that refugees have a lower probability of being employed than natives with 23-percentage points employment gap, while this gap is only 5 percentage points for other migrants. This can be interpreted as the lower level of employment outcome of refugees, and other migrants are partially explained by the difference in countries of origin. Immigrants coming from Syria and Afghanistan, Iraq, and Somalia have a lower probability of being in employment than immigrants coming from China(base category).[9] The result from Table(2) shows that the magnitude of employment gap between natives and refugees is higher than the gap between natives and other migrants, this provides evidence that disentangling the two immigrants group is essential for a better integration strategies and in understanding their performance in the labor market.

Figure 2 explores the conditional employment outcome of refugees and other migrants relative to natives over time. The plot illustrates to what extent the compositional difference and other factors (such as age, gender, education, language, and countries of origin) among the migrant group attribute to employment differences. It is evident that refugees have difficulties of integration upon arrival and improves over time as the duration of residence increases and with the accumulation of host country-specific knowledge such as language acquisition and labor market experience. As shown in the plot, upon arrival refugees have below 20-percentage point employment probability compared to 40 percentage points for other migrants. Although the employment outcome improves over time, even after two decades, refugees have lower employment outcomes than other migrants and natives.

[9]The table with list of country of origin dummies are available upon request

Figure 2: Employment probability gap between refugees, other migrants and natives



6.2 Gender difference

For many reasons, men and women have different labor market outcomes so, it is important to disentangle the estimation by gender and explore which specific groups of the migrant has lower employment outcome and seek an explanation for a lower probability of employment. Hence, Table (3) present the result, separately for males and females.

The first five columns present the results for males, and the next five columns present the result for females. The result provides an interesting and informative insight across both genders. After controlling for the proficiency of the language, level of education, and countries of origin, refugee men are still 19 percentage points less likely to be in employment than native men (see, columns 5). On the contrary, the employment probability gap between native men and other migrant men disappeared after controlling educational attainment level (see, the marginal effects change from columns 4 to 5, Table (3). The result is in line with the above argument that other migrants are positively self-selected with respects to education and country-specific language proficiency. This result is inconsistent with the finding of Algan et al.(2010) who argue that migrants men have a lower employment probability than the German, except those migrants from EU16 member state countries. However, Algan et al.(2010) do not distinguish between unemployed and inactive individuals that might hide the role of the supply side, thus their estimation

focuses on overall employment differential between native and immigrants and do not disentangle refugees and other economic migrants.

Table 3: The employment probability gap between refugees, other migrants and natives.(by gender)

	Male					Female				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Refugee	-0.467***	-0.482***	-0.431***	-0.352***	-0.197***	-0.571***	-0.607***	-0.575***	-0.445***	-0.218***
	(0.00696)	(0.00743)	(0.00837)	(0.00852)	(0.0333)	(0.00953)	(0.0154)	(0.0165)	(0.0129)	(0.0297)
Other Migrant	-0.102***	-0.121***	-0.0934***	-0.0337	-0.0391	-0.145***	-0.153***	-0.139***	-0.0741***	-0.0323***
	(0.00801)	(0.00874)	(0.00911)	(0.00931)	(0.0339)	(0.00979)	(0.00943)	(0.00956)	(0.0118)	(0.0162)
Health status	-0.0579***	-0.0578***	-0.0584***	-0.0538***	-0.0546***	-0.0403***	-0.0408***	-0.0409***	-0.0372***	-0.0378***
	(0.00378)	(0.00377)	(0.00379)	(0.00366)	(0.00364)	(0.00442)	(0.00347)	(0.00348)	(0.00439)	(0.00440)
COO-degree		0.0431***	0.0355***	-0.0541***	-0.0561***		0.0338***	0.0312***	-0.0917***	-0.106***
		(0.00778)	(0.00768)	(0.00822)	(0.00804)		(0.0109)	(0.0101)	(0.0121)	(0.0120)
Good German writing			0.0722***	0.0583***	0.0556***			0.0487***	0.0366***	0.0256***
			(0.00552)	(0.00521)	(0.00529)			(0.00778)	(0.00803)	(0.00795)
Medium education				0.0974***	0.0933***				0.152***	0.144***
				(0.00646)	(0.00637)				(0.00930)	(0.00926)
Higher education				0.201***	0.202***				0.214***	0.206***
				(0.00818)	(0.00816)				(0.0198)	(0.0196)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country of origin dummy	No	No	No	No	Yes	No	No	No	No	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fed.State dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log pseudo-likelihood	-4727.2786	-17655.933	-6790.945	-4727.2786	-17655.933	-6790.945	-4727.2786	-17655.933	-6790.945	-6790.945
Wald chi2	758.64	2116.09	1361.32	758.64	2116.09	1361.32	758.64	2116.09	1361.32	1361.32
Observations	80,297	80,297	80,297	80,297	80,297	85,792	85,792	85,792	85,792	85,792
Number of persons	16,256	16,256	16,256	16,256	16,256	17,365	17,365	17,365	17,365	17,365

Note: The table shows the estimated coefficients. Z-statistics are in parentheses. The standard errors are clustered by a person. The marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects for continuous variables calculated at a mean of an explanatory variable. Native Germans, low education, no vocational degree, intermediate or bad German writing skill, not married, no children in the household, below the age of 25 and male are the base categories in the regression *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The result from Table (3) using female sub-sample shows that female refugees and other migrants face more difficulties in the labor market than female natives. The employment gap is much higher for refugee women than other migrant women, with 21 percentage points and 3 percentage points, respectively. Even after controlling factors that might influence women's economic participation, such as marriage, having children in the household along with the level of education, language proficiency, and country of origin, the gap remains statistically significant for both refugees and other migrants women compared to native women. The result is consistent with the existing evidence by Dumot et al.(2016), Brücker, Jaschke & Kosyakova (2019) and Kosyakova et al. (2021)find that refugee women face more difficulties to find job. For both genders, education and proficiency of language increases the employment outcome of refuges and other migrants, whereas having bad health status and vocation degree from origin country have adverse correlation with employment probability in Germany.

6.3 Employment probability gap between refugees and other migrants

In this section, the estimation is restricted to immigrant population to understand in deep whether being a refugee entails a different probability of employment than other migrants in the labor market. Hence, Table (4) provides the employment probability gap between refugees and other migrants. In column (1), following Ruiz and Vargas-Silva, (2018), I controlled for self-responded general health status. Bhui et al. (2003) suggest that health status of refugees adversely influences their performance in the labor market. The evidence suggests that having a very bad health status reduces the probability of being in employment by close to 6.5 percentage points. This is consistent with the result mentioned above. The result from column (1) reveals that refugees are 43 percentage points less likely to find employment than other migrants, other things being equal. The employment probability gap narrows as more control variables included in the regression. In column (2), a dummy for a vocational degree from the home country is added to the specification. The result seems interesting that having home country education increase the probability of being employed by 5 percentage points and reduce the employment probability gap between refugees and other migrants in the destination country. The magnitude of the marginal effects for being refugee reduced slightly from -0.429 to -0.417 (see, the change from column 2 to column 3). Although this result is against from most previous studies, for example, Friedberg (2000), immigrants with home country education are more likely to find employment in the host country than immigrants without home country education.

The result from column (3) shows that language skills increase the probability of

being employed by 8.6 percentage points. The marginal effect coefficient of being refugees changed (see the change in the marginal effect of columns 3 and 4). This indicates that the lower probability of refugees being in employment partially explains by the difference in language skills between refugees and other migrants. The result largely confirms the existing studies looking at migrants' integration into the host country and suggests that language proficiency improves the performance of immigrants in the labor market. For example, Beyer (2016) finds that having German language skill increases the labor market performance of immigrants in Germany. Likewise, studies for other countries suggest that language is the main factor affecting the performance of refugees in the labor market (Dustmann and Fabbri, 2003). Column (4) includes dummies for education according to the International Standard Classification of Education (ISCED) education classification. The reference group consisted of an individual with lower or general elementary education. However, the ISCED does not tell whether the education earned in the home country or at the destination. Nevertheless, the result reveals that education in all categories has a positive and significant influence on the probability of employment. Moreover, the regression in column(5) shows that the employment probability gap between refugee and other migrants become lower as the coefficient for refugee reduced from 0.37 percentage points to 0.19 percentage points (see the difference in column 4 and column 5).

In column (5) a series of dummies for the country of origins are included to see whether countries of origin are important in explaining the employment disparity between refugees and other migrants in the host country labor market. Country of origins that has an observation on refugees and other migrants are included in the analysis. Some origin countries, however, have few observations of refugees or other migrants; in this case, I combine such origin countries into one and named it other. The result shows that refugees have a 19-percentage point lower probability of employment than other migrants. The coefficient for being refugees reduced from around 36 percentage points to 15 percentage points (see the change from column 5 to column 6). This implies that the lower probability of refugees being in employment, partially explained by the difference in country of origin between refugees and other migrants. Further, the result provides heterogeneity across the country of origin. Most importantly, Immigrants from Somalia and Syria have a lower employment probability than immigrants from China. One potential reason might be that the educational level of immigrants varies by country of origin. This result is in line with Adsera and Chiswick (2007) who suggest the importance of country of origin for the performance of immigrants in the labor market across the European country.

6.3.1 Duration of residence

In a further step, column (6) in Table (4) I control for years since migration because the duration of residence in the host country plays a crucial role in integrating immigrants

Table 4: Differences in employment outcomes between refugees and other migrants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Refugee_migrants	-0.435***	-0.429***	-0.3911***	-0.368***	-0.193***	-0.119***	-0.0735***
	(0.00789)	(0.00800)	(0.00872)	(0.00897)	(0.0135)	(0.0130)	(0.0143)
Health status	-0.0648***	-0.0641***	-0.0643***	-0.0619***	-0.0648***	-0.0712***	-0.0716***
	(0.00798)	(0.00798)	(0.00821)	(0.00814)	(0.00811)	(0.00812)	(0.00815)
COO-degree		0.0492***	0.0367***	-0.0277**	-0.0351***	-0.00819	-0.00808
		(0.00815)	(0.00815)	(0.0114)	(0.0109)	(0.0105)	(0.0104)
Good German writing			0.0861***	0.0773***	0.0709***	0.0470***	0.0449***
			(0.00584)	(0.00574)	(0.00561)	(0.00538)	(0.00540)
Medium education				0.113***	0.0969***	0.0715***	0.0688***
				(0.00955)	(0.00945)	(0.00905)	(0.00899)
High education				0.114***	0.121***	0.111***	0.108***
				(0.0140)	(0.0138)	(0.0133)	(0.0132)
Years since migration						0.0219***	0.0157***
						(0.000838)	(0.00107)
Cohort							-0.162***
							(0.0187)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country of origin dummy	No	No	No	No	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fed.State dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log pseudo-likelihood	-4727.2786	-17655.933	-6790.945	-4727.2786	-17655.933	-6790.945	-4727.2786
Wald chi2	894.05	942.34	934.18	1182.50	1182.50	1150.91	758.64
Observations	22,500	22,500	22,580	22,500	22,500	22,500	22,500
Number of persons	8,396	8,396	8,396	8,396	8,396	8,396	8,396

Note: The table shows the estimated coefficients. Z-statistics are in parentheses. The standard errors are clustered by a person. The marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects for continuous variables calculated at a mean of an explanatory variable. Native Germans, low education, no vocational degree, intermediate or bad German writing skill, not married, no children in the household, below the age of 25 and male are the base categories in the regression *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

into the labor market. This is mainly because as immigrants stay longer, they acquire information on how the labor market functions, develop skills that are in demand, and extend their social network that could support them to access the labor market. The descriptive statistics show that, on average, refugees stayed in Germany for less than 5 years compared to other migrants who lived for more than 12 years in Germany. After controlling for years since migration, the result reveals that years since migration increases the probability of employment by 2 percentage points. Moreover, the coefficient for being a refugee significantly changed, meaning that the employment probability gap between refugees and other migrants reduced to 11 percentage points. This implies that the duration of residence in the host country partially explains the employment probability gap between refugees and other migrants.

6.3.2 A cohort of recent immigrants

In addition to years since migration, the dummy variable for immigrant who arrived in Germany after 2013 are included in the last specification (Table 4, column 7). This is because of two main reasons: first, a large number of asylum seekers entered Germany after 2013. Second: the majority of refugees who entered after 2013 mostly come from a certain country of origin such as Syria, Iran, Iraq, Afghanistan, Eritrea, and Somalia. Following the large inflow of refugees and asylum seekers, on the one hand, a new integration law has passed to allow asylum seekers and refugees access to public-funded German courses and to speed up the asylum process particularly for refugees with an approved asylum application and those who come from a certain country of origin.[10] On the other hand, asylum seekers and refugees require some time to accumulate country-specific human capital and knowledge about the labor market, that are rewarded in the German labor market. Hence, it is important to understand whether the employment probability gap between refugees and other migrants can be explained by the fact that most immigrants arrived in Germany recently. The result shows that there is a negative and significant correlation between the migrants cohort that arrived after the year 2013 and the likelihood of employment. Furthermore, the result confirms that the employment probability gap between refugees and other migrants are reduced from 11 percentage points to 7 percentage points. The majority of refugees arrived in Germany very recently so they find it hard to find employment than refugees and other migrants that arrived before 2013. This result from Table (4) is consistent with previous studies looking at refugee integration in Germany and other European countries that suggest that refugees face worse employment outcomes than other migrants. For instance, Brücker et al.(2015) find that although the employment rate of refugees and other migrants eventually increase with duration of residence in Germany, it has taken twice longer for refugees to find a job than other migrants. Dustmann et al. (2017) show that refugees are 11 percentage points less likely to find employment than other migrants from non-EU countries. Fasani et al. (2018) also document that refugees' employment outcomes are worse than those of other migrants are, with 11.5 percentage points less probability to find employment than other migrants are across twenty European countries.

6.4 Educational attainment difference

Further, this paper provides evidence of heterogeneous analysis by education level, thus Table (5) present the conditional employment probability gap between natives-refugees and natives-other migrants for low (column 1) medium (column 2) and high education

[10]See the detail about the role of country of origin and legal status of asylum seekers and economic integration: Kosyakova & Brenzel,(2020)

(column 3) attainment level. The result shows that low educated refugees and other migrants do not statistically differ from low educated natives in employment outcome.

..... {Table 5 here }.....

Column (1) and column (2) shows that low and medium educated refugees are 20 percentage points and 24 percentage points less likely to find employment than low and medium educated natives, while there is no significant difference in employment probability between low and medium educated other migrants and comparable natives. Column (3) shows that highly educated refugees and other migrants have a lower probability of employment than high-educated Germans with 30 percentage points and 13 percentage points respectively. This means that catching up with natives is more difficult for highly educated immigrants, in particular for refugees.

The result from Table(5) is consistence with the argument that refugees have lower employment outcome than other migrants and natives. But it is crucial to note that heterogeneity analysis reveals an interesting result across different specification, for instance, other migrants women and highly educated other migrants are less likely to find employment than comparable natives in the destination country.

6.5 Non-linear decomposition method

So far, the random-effects probit along with the marginal effects is used to estimate the employment probability gap between natives and immigrants. However, the result does not quantify how much each factor contributes to the employment probability gap. Hence, to quantify the extent of the employment probability difference between the groups due to differences in labor market characteristics (endowment or explained gap) and due to the difference in the coefficient (unexplained gap), I use the nonlinear decomposition technique as the supplement of the paper.

..... {Table 6 here }.....

The Blinder-Oaxaca (1973)[11] The nonlinear decomposition method quantifies the contribution of each explanatory variable to employment difference between natives and refugees as well as between natives and other migrants. Thus, in Table (7), I estimate the gap between natives, refugees and other migrants. This decomposition technique is

[11]Blinder-Oaxaca (1973) introduce the decomposition method to decompose the gap in labor market outcome between two groups.See the detail and the setup of the decomposition method for further understanding.

analogous to Fairlie (2005) and Corluy & Verbist (2014)[12] Table (7) shows the non-linear decomposition estimated after the probit model. The result provides the average employment probability for each group and the raw gap between the groups. In specification (1) and (2), I am mainly interested in the contribution of education, language proficiency, country of origin to the employment probability gap between natives and refugees as well as natives and other migrants, respectively. In specification (3), I estimate the gap between refugees and other migrants and additional control variables included such as years since migration and the recent migration cohort. Overall, the employment probability for natives is about 78 percent and 66.5 percent for other migrants, but the employment probability for refugees is only 21 percent. The raw gap between natives and refugees is about 56.5 percent, whereas this gap is only 11.5 percent for other migrants. In a similar vein, the raw gap between other migrants and refugees accounts for 45 percent in employment probability. In specification (1) 51 percent of the employment probability gap between natives and refugees can be attributed to the difference in observed characteristics(explained gap), which means that the model explains 51 percent of the employment gap between natives and refugees due to difference between the groups in the labor market characteristics such as education, language skills and socio-demographic characteristics. In specification (2), 8 percent of the employment probability gap between natives and other migrants can be explained by a difference in labor market characteristics (explained gap). The remaining gap cannot be explained by labor market characteristics used in this analysis.Some of the factors that are not considered in this analysis such as personality characteristics, the social network of immigrants and education recognition of credentials might be important in explaining the employment gap between refugees, other migrants and natives.

6.6 Robustness check

6.6.1 Full-time and part-time employment

One may wonder about the importance of part-time and full-time employment. Most importantly, by gender, because the result from Table (3) shows that while there is no significant difference between German male and other migrants male in the likelihood of employment, both refugees and other migrants females have lower employment probability than German female and this result remains significant even after controlling socio-demographic characteristics such as marital status, children in the household and all other covariates in the analysis. Therefore, it is important to see whether the result is

[12]Corluy & Verbist (2014) using the Belgium labour survey, examine the employment gap between natives and EU migrants and non-EU migrants using the nonlinear decomposition technique. non-linear decomposition method.

driven due to the type of employment, in this estimation, the multinomial probit model is utilized to investigate the probability of either full-time or part-time employment between refugees, other migrants, and natives. The reference group is individuals who are unemployed and searching for a job.

Column (1) and (2) in Table (7) provides the regression result for full-time and part-time employment probability using the pooled sample. The result suggests that both refugees and other migrants have lower employment probability than natives in both full-time and part-time employment. However, the employment gap is stronger for full-time employment than part-time employment. For example, refugees have 15 percentage points less likely to be in full-time employment than comparable Germans. While this gap is only 2 percentage points in part-time employment. In general, the result is consistent with the baseline estimation in Table (2). Interestingly, the female has 25 percentage points more likely to find part-time employment than the male, but the opposite is true when it comes to full-time employment probability. This is interesting in understanding the employment and wage gap across gender, however, that is beyond the scope of this analysis.

..... {Table 7 here }.....

Column (3) and (4) shows the estimation in full-time and part-time employment for male. The result indicates that refugee male has 13-percentage points lower probability of being in full-time employment than male Germans. In contrary, refugee male has 2-percentage points higher probability of being in part-time employment. This implies that the employment gap between refugees and natives driven due to the lower employment chances of refugees in full-time employment. While the employment probability gap between other migrants and natives is insignificant in both full-time and part-time employment. The regression result is consistent with the baseline estimation in Table (2). Similarly, column (4) and (6) provides the result for female. Both refugee and other migrants females have lower employment probability in both full-time and part-time employment than female Germans. For full-time employment, the employment gap between German women and immigrants women is lower than for part-time employment. This might be because most German women are in part-time employment, so the competition for part-time employment is higher for women than for full-time employment.

7 Conclusion

Using the German Socio-Economic Panel data from 1995 to 2019 waves, I explore the employment outcome of those who migrated to seek asylum, those who migrated for

other reasons from non-EU countries, mainly from Africa, Asia, Arab, West Balkan and Post-Soviet states. The result suggests that refugees have an 23-percentage point lower employment probability than natives. In comparison, the employment gap is 5 percentage points for other migrants. However, the estimation by gender reveals that other migrant men do not differ from natives in the likelihood of employment. Whereas, refugee men are 19 percentage points less likely to find employment than native men, other things being equal. Likewise, female refugees and other migrants have a lower employment probability than female natives; the employment gap is higher for refugee women than for other migrant women. The analysis also shows heterogeneity by educational attainments level between natives and the two immigrants group. Refugees have lower employment probability than natives across all education attainment level. For low and medium education levels, there is no significant difference between other migrants, and natives in the likelihood of being in employment.Yet, highly educated other migrants are less likely to find employment than highly educated natives.

The comparison between refugees and other migrants suggests that refugees have worse employment outcomes, even after controlling for years of residence in Germany and year of cohort. There are some possible explanations for the employment gap between refugees and other migrants, including differences in German language proficiency, duration of residence, the recent arrival of immigrants, and countries of origin. However, controlling these factors seems not to close the employment gap between refugees and other migrants.

The previous studies suggest that one of the main barriers for refugees to find employment is a lack of recognition of qualification (Brücker et al., 2019; Ager and Strang, 2008). More specifically, the lower employment performance of highly skilled refugees and other migrants might be explained by a lack of qualification recognition. Policies that place particular attention on refugee women that promote their participation in the labor market would increase their integration into the labor market. It is essential to understand the integration of immigrants takes time, as most refugees entered Germany recently; one might not expect full integration into the labor market. It is also important to note that this analysis only focuses on immigrants who moved to Germany on or after 1995 and explores migrant employment status. It does not consider the quality of employment, which might be relevant to investigate in deep the position of refugees and other migrants in the host country labor market. In addition to the occupational position of immigrants, It is worth to investigate in detail the labor outcome of immigrant women because the data suggest that other migrants women have a higher level of education, language writing skills, but they do have lower employment probability. There should be other explanations for the lower performance of other migrants women in the labor market than the standard sociodemographic factors such as marital status and having children in the household. Finally, As the characteristics of refugees differ from other migrants

in terms of their motive for migration and human capital characteristics, disentangling immigrants by migration category is crucial to understand the performance of immigrants in the labor market and failing to do so might lead to biased conclusion.

References

Adsera, A. and Chiswick, B. R. (2007). Are there gender and country of origin differences in immigrant labor market outcomes across european destinations? *Journal of population economics*, 20(3):495–526.

Aeberhardt, R., Fougère, D., Pouget, J., and Rathelot, R. (2010). Wages and employment of french workers with african origin. *Journal of population economics*, 23(3):881–905.

Ager, A. and Strang, A. (2008). Understanding integration: A conceptual framework. *Journal of refugee studies*, 21(2):166–191.

Aldashev, A., Gernandt, J., and Thomsen, S. L. (2009). Language usage, participation, employment and earnings: Evidence for foreigners in west germany with multiple sources of selection. *Labour Economics*, 16(3):330–341.

Aldashev, A., Gernandt, J., and Thomsen, S. L. (2012). The immigrant-native wage gap in germany. *Jahrbucher fur Nationalokonomie & Statistik*, 232(5).

Algan, Y., Dustmann, C., Glitz, A., and Manning, A. (2010). The economic situation of first and second-generation immigrants in france, germany and the united kingdom.

Basilio, L., Bauer, T. K., and Kramer, A. (2017). Transferability of human capital and immigrant assimilation: An analysis for germany. *Labour*, 31(3):245–264.

Bergseng, B., Degler, E., and Lüthi, S. (2019). Overview: Unlocking the potential of migrants through vocational education and training in germany.

Bevelander, P. (2011). The employment integration of resettled refugees, asylum claimants, and family reunion migrants in sweden. *Refugee Survey Quarterly*, 30(1):22–43.

Bhui, K., Stansfeld, S., Hull, S., Priebe, S., Mole, F., and Feder, G. (2003). Ethnic variations in pathways to and use of specialist mental health services in the uk: systematic review. *The British Journal of Psychiatry*, 182(2):105–116.

Bleakley, H. and Chin, A. (2010). Age at arrival, english proficiency, and social assimilation among us immigrants. *American Economic Journal: Applied Economics*, 2(1):165–92.

Borjas, G. J. (1985). Assimilation, changes in cohort quality, and the earnings of immigrants. *Journal of labor Economics*, 3(4):463–489.

Borjas, G. J. (1988). *International Differences in the Labor Market Performance of Immigrants*. ERIC.

Borjas, G. J. (1989). Economic theory and international migration. *International migration review*, 23(3):457–485.

Boubtane, E., Dumont, J.-C., and Rault, C. (2016). Immigration and economic growth in the oecd countries 1986–2006. *Oxford Economic Papers*, 68(2):340–360.

Brell, C., Dustmann, C., and Preston, I. (2020). The labor market integration of refugee migrants in high-income countries. *Journal of Economic Perspectives*, 34(1):94–121.

Brücker, H., Croisier, J., Kosyakova, Y., Kröger, H., Pietrantuono, G., Rother, N., and Schupp, J. (2019a). Language skills and employment rate of refugees in germany improving with time. *DIW Weekly Report*, 9(4/6):49–61.

Brücker, H., Hauptmann, A., and Vallizadeh, E. (2015). Flüchtlinge und andere migranten am deutschen arbeitsmarkt: Der stand im september 2015. Technical report, Aktuelle Berichte.

Brücker, H., Jaschke, P., and Kosyakova, Y. (2019b). Integrating refugees and asylum seekers into the german economy and society: Empirical evidence and policy objectives. *Migration Policy Institute, Washington DC*.

Brücker, H., Liebau, E., Romiti, A., and Vallizadeh, E. (2014). Arbeitsmarktintegration von migranten in deutschland: Anerkannte abschlüsse und deutschkenntnisse lohnen sich. Technical report, IAB-Kurzbericht.

Brücker, H., Rother, N., Schupp, J., Gostomski, C. B. v., Böhm, A., Fendel, T., Friedrich, M., Giesselmann, M., Holst, E., Kosyakova, Y., et al. (2017). Iab-bamf-soep-befragung von geflüchteten. flucht, ankunft in deutschland und erste schritte der integration. iab-kurzbericht nr. 24, nürnberg: Institut für arbeitsmarkt-und berufsforschung (iab) der bundesagentur für arbeit.

Büchel, F. and Frick, J. R. (2005). Immigrants' economic performance across europe–does immigration policy matter? *population Research and policy Review*, 24(2):175–212.

Chin, A. (2005). Long-run labor market effects of japanese american internment during world war ii on working-age male internees. *Journal of Labor Economics*, 23(3):491–525.

Chin, A. and Cortes, K. E. (2015). The refugee/asylum seeker. In *Handbook of the economics of international migration*, volume 1, pages 585–658. Elsevier.

Chiswick, B. R. (1978). The effect of americanization on the earnings of foreign-born men. *Journal of political Economy*, 86(5):897–921.

Chiswick, B. R., Lee, Y. L., and Miller, P. W. (2004). Immigrants' language skills: the australian experience in a longitudinal survey. *International Migration Review*, 38(2):611–654.

Chiswick, B. R., Lee, Y. L., and Miller, P. W. (2005). A longitudinal analysts of immigrant occupational mobility: A test of the immigrant assimilation hypothesis. *International Migration Review*, 39(2):332–353.

Chiswick, B. R. and Miller, P. W. (2007). *The economics of language: International analyses*. Routledge.

Chiswick, B. R. and Miller, P. W. (2009). The international transferability of immigrants' human capital. *Economics of Education Review*, 28(2):162–169.

Chiswick, B. R. and Miller, P. W. (2015). International migration and the economics of language. In *Handbook of the economics of international migration*, volume 1, pages 211–269. Elsevier.

Clark, K. and Lindley, J. (2006). Immigrant labour market assimilation and arrival effects: evidence from the uk labour force survey.

Cohen, Y., Haberfeld, Y., and Kogan, I. (2011). Who went where? jewish immigration from the former soviet union to israel, the usa and germany, 1990–2000. *Israel Affairs*, 17(1):7–20.

Colic-Peisker, V. and Tilbury, F. (2006). Employment niches for recent refugees: Segmented labour market in twenty-first century australia. *Journal of refugee studies*, 19(2):203–229.

Connor, P. (2010). Explaining the refugee gap: Economic outcomes of refugees versus other immigrants. *Journal of Refugee Studies*, 23(3):377–397.

Constant, A. and Massey, D. S. (2003). Self-selection, earnings, and out-migration: A longitudinal study of immigrants to germany. *Journal of population Economics*, 16(4):631–653.

Constant, A. and Zimmermann, K. F. (2005). Immigrant performance and selective immigration policy: a european perspective. *National Institute Economic Review*, 194(1):94–105.

Corluy, V., Marx, I., and Verbist, G. (2011). Employment chances and changes of immigrants in belgium: The impact of citizenship. *International Journal of Comparative Sociology*, 52(4):350–368.

Cortes, K. E. (2004). Are refugees different from economic immigrants? some empirical evidence on the heterogeneity of immigrant groups in the united states. *Review of Economics and Statistics*, 86(2):465–480.

Degler, E., Liebig, T., and Senner, A.-S. (2017). Integrating refugees into the labour market-where does germany stand? *ifo DICE Report*, 15(3):6–10.

Dustmann, C. (1994). Speaking fluency, writing fluency and earnings of migrants. *Journal of Population economics*, 7(2):133–156.

Dustmann, C. and Fabbri, F. (2003). Language proficiency and labour market performance of immigrants in the uk. *The economic journal*, 113(489):695–717.

Dustmann, C., Fasani, F., Frattini, T., Minale, L., and Schönberg, U. (2017). On the economics and politics of refugee migration. *Economic policy*, 32(91):497–550.

Dustmann, C. and Frattini, T. (2011). Immigration: the european experience. *Centro Studi Luca d'Agliano Development Studies Working Paper*, (326).

Dustmann, C. and Frattini, T. (2014). The fiscal effects of immigration to the uk. *The economic journal*, 124(580):F593–F643.

Dustmann, C. and Soest, A. v. (2001). Language fluency and earnings: Estimation with misclassified language indicators. *Review of Economics and Statistics*, 83(4):663–674.

Elsner, B. and Zimmermann, K. F. (2016). Migration 10 years after: Eu enlargement, closed borders, and migration to germany. In *Labor migration, EU enlargement, and the great recession*, pages 85–101. Springer.

Euwals, R., Dagevos, J., Gijsberts, M., and Roodenburg, H. (2007). Immigration, integration and the labour market: Turkish immigrants in germany and the netherlands.

Fairlie, R. W. (2005). An extension of the blinder-oaxaca decomposition technique to logit and probit models. *Journal of economic and social measurement*, 30(4):305–316.

Fasani, F., Llull, J., and Tealdi, C. (2020). The economics of migration: Labour market impacts and migration policies.

Friedberg, R. M. (2000). You can't take it with you? immigrant assimilation and the portability of human capital. *Journal of labor economics*, 18(2):221–251.

Hansen, R. (2012). *The centrality of employment in immigrant integration in Europe*. Migration Policy Institute Europe.

Hardoy, I. and Schøne, P. (2014). Returns to pre-immigration education for non-western immigrants: why so low? *Education Economics*, 22(1):48–72.

Hinte, H. and Zimmermann, K. F. (2014). Does the calculation hold? the fiscal balance of migration to denmark and germany. Technical report, IZA Policy Paper.

Jestl, S., Landesmann, M., Leitner, S., and Wanek-Zajic, B. (2019). Employment gaps between refugees, migrants and natives: Evidence from austrian register based labour market data. Technical report, wiiw Working Paper.

Kahanec, M., Zaiceva, A., and Zimmermann, K. F. (2011). Ethnic minorities in the european union: An overview. *Ethnic diversity in European labor markets: Challenges and solutions*, page 1.

Kanas, A., Van Tubergen, F., and Van der Lippe, T. (2011). The role of social contacts in the employment status of immigrants: A panel study of immigrants in germany. *International Sociology*, 26(1):95–122.

Kogan, I. (2007). A study of immigrants' employment careers in west germany using the sequence analysis technique. *Social Science Research*, 36(2):491–511.

Kogan, I. (2011). New immigrants—old disadvantage patterns? labour market integration of recent immigrants into germany. *International Migration*, 49(1):91–117.

Kosyakova, Y. and Brenzel, H. (2020). The role of length of asylum procedure and legal status in the labour market integration of refugees in germany. *SozW Soziale Welt*, 71(1-2):123–159.

Luik, M.-A., Emilsson, H., and Bevelander, P. (2016). Explaining the male native-immigrant employment gap in sweden: The role of human capital and migrant categories.

Mayer, M. M. (2018). Skilled worker migration to germany from third countries 2017. bertelsmann stiftung factsheet migration.

Münz, R. and Ulrich, R. (1997). Changing patterns of immigration to germany. *Migration past, migration future: Germany and the United States*, 1(4):80–92.

Reyneri, E. and Fullin, G. (2011). Labour market penalties of new immigrants in new and old receiving west european countries. *International Migration*, 49(1):31–57.

Ruiz, I. and Vargas-Silva, C. (2018). Differences in labour market outcomes between natives, refugees and other migrants in the uk. *Journal of Economic Geography*, 18(4):855–885.

Salikutluk, Z., Giesecke, J., and Kroh, M. (2016). Refugees entered the labor market later than other migrants. *DIW Economic Bulletin*, 6(34/35):407–413.

Schmidt, C. M. and Zimmermann, K. F. (1992). Migration pressure in germany: Past and future. In *Migration and economic development*, pages 201–230. Springer.

Shields, M. A. and Wheatley Price, S. (2001). Language fluency and immigrant employment prospects: evidence from britain's ethnic minorities. *Applied Economics Letters*, 8(11):741–745.

Siedler, T., Schupp, J., Spiess, C. K., and Wagner, G. G. (2008). The german socio-economic panel as reference data set.

Yao, Y. and van Ours, J. C. (2015). Language skills and labor market performance of immigrants in the netherlands. *Labour Economics*, 34:76–85.

Zwysen, W. (2019). Different patterns of labor market integration by migration motivation in europe: the role of host country human capital. *International Migration Review*, 53(1):59–89.

A Appendix: Tables

Table 5: The employment probability gap between refugees, other migrants and natives.(by educational level)

	Low education	Medium education	High education
	(1)	(2)	(3)
Refugee	-0.202***	-0.243***	-0.3005***
	(0.0510)	(0.0387)	(0.05470)
Other Migrant	-0.0304	-0.0621	-0.1276***
	(0.0528)	(0.0372)	(0.0517)
Control variables	Yes	Yes	Yes
country of origin dummy	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes
Fed. State dummy	Yes	Yes	Yes
Log pseudo-likelihood	-4727.2786	-17655.933	-9670.487
Wald chi2	758.64	2116.09	1457.51
Observations	19,671	95,494	50,924
Number of persons	5,498	18,456	9,667

Note: The table shows the estimated coefficients. Z-statistics are in parentheses. The standard errors are clustered by a person. The marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects for continuous variables calculated at a mean of an explanatory variable. Native Germans, low education, no vocational degree, intermediate or bad German writing skill, not married, no children in the household, below the age of 25 and male are the base categories in the regression *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6: nonlinear decomposition method

	Native-Refugee	Native-other Migrant	other Migrant-Refugee
	(1)	(2)	(3)
Employment probability of Germans	0.78	0.78	-
Employment probability of Refugees	0.21	-	0.21
Employment probability of other Migrants	-	0.665	0.665
Raw Gap	0.565	0.115	0.45
Total explained/endowments	0.51	0.08	0.35
Observations	156,214	153,464	22,500

Note:Bootstrap standard error (500 replications) Source: Socio-Economic Panel (SOEP), waves for the period between 1995-2019, version 36, own calculation.

Table 7: Robustness check: The employment probability of refugees and other migrants compared to natives(multinomial probit model)

	Pooled		Male		Female	
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.344***	0.251***				
	(0.0081)	(0.005)				
Refugee	-0.154***	-0.021***	-0.128***	-0.0192***	-0.044***	-0.172***
	(0.0375)	(0.0246)	(0.0269)	(0.0103)	(0.06093)	(0.0519)
Other Migrant	-0.057***	-0.013***	-0.033***	-0.0107***	-0.036***	-0.0622***
	(0.0180)	(0.0127)	(0.0165)	(0.00625)	(0.02250)	(0.02406)
Health problem	-0.133***	-0.0183***	-0.107***	-0.0077***	-0.0833***	-0.0765***
	(0.00819)	(0.0058)	(0.0062)	(0.0029)	(0.00991)	(0.00981)
COO-degree	-0.069***	-0.0108***	-0.0401***	-0.0061***	-0.0732***	-0.0213***
	(0.01431)	(0.0105)	(0.0117)	(0.0048)	(0.0198)	(0.02118)
Good German writing	0.1257***	-0.0011***	0.0971***	-0.0092***	0.0956***	0.02118***
	(0.01233)	(0.00914)	(0.00897)	(0.00368)	(0.01955)	(0.01835)
Medium education	0.107***	0.027***	0.084***	-0.0020***	0.0751***	0.0795***
	(0.0131)	(0.0089)	(0.0090)	(0.00372)	(0.0171)	(0.01645)
High education	0.183***	0.033***	0.129***	-0.0026***	0.1035***	0.1408***
	(0.0190)	(0.0138)	(0.0140)	(0.0057)	(0.0282)	(0.0286)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Country of origin dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Fed.state dummy	Yes	Yes	Yes	Yes	Yes	Yes
Log pseudo-likelihood	-30664.667	-30497.543	-30478.989	-30394.098	-30377.133	-30045.75
Wald chi2	3277.26	3530.23	3507.87	3749.34	3730.18	3729.02
Observations	166,089	166,089	80,297	80,297	85,792	85,792
Number of persons	33,621	33,621	16,256	16,256	17,365	17,365

Note: The table shows the estimated coefficients. Z-statistics are in parentheses. The standard errors are clustered by a person. The marginal effects of dummy variables are evaluated for a discrete change from 0 to 1. Marginal effects for continuous variables calculated at a mean of an explanatory variable. Native Germans, low education, no vocational degree, intermediate or bad German writing skill, not married, no children in the household, below the age of 25 and male are the base categories in the regression *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

A.1 Appendix: List of countries of origin

Korea	Iran	Indonesia	Syria	Russia	Sri Lanka
Japan	Israel	India	Afghanistan	Thailand	Saudi Arabia
Ethiopia	Ghana	Bangladesh	Tunisia	Mauritius	Yemen
Nigeria	Iraq	Nepal	Morocco	China	Kazakhstan
Albania	Lebanon	Kyrgyzstan	Ukraine	Algeria	Togo
Mozambique	Egypt	Tajikistan	Vietnam	Somalia	Pakistan
South Africa	Eritrea	Uzbekistan	Libya	Kenya	Bosnia-Herzegovina
Macedonia	Belarus	Cameroon	Kosovo-Albania	Georgia	Sudan
Armenia	Serbia	Gambia	Congo	Turkey	Ex-Yugoslavia