Determinants of Welfare Benefit Use of Immigrant Groups - Longitudinal Evidence from Germany

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Abstract

While recent literature in Germany has compared predictors of welfare receipt between EU and non-EU immigrants, refugees have yet to be added to the analysis. Using survey data of approximately 6,000 immigrants living in Germany, I compare the predictors of basic unemployment benefits receipt for intra-EU immigrants, refugees, and third-country immigrants. In particular, I investigate how education affects the likelihood of welfare use for each immigrant group. I find that higher education decreases likelihood of welfare receipt for EU and third-country immigrants, but not for refugees. Even after controlling for human capital factors, sociodemographic characteristics, and factors related to migration such as legal status and age at migration, refugees remain significantly more likely to receive benefits. Results indicate that refugees' education may not be used to its full potential in the labor market or that they face additional challenges that merit further research. A further and unanticipated finding is that permanent residents are less likely to receive unemployment benefits, perhaps indicating positive effects of a secure residency or selection into permanent residency among those with the greatest labor market success. Overall, this research shows that while refugees' educational credentials may be undervalued, challenges beyond human capital deficiencies and sociodemographic characteristics also must be considered when studying immigrants' receipt of social benefits. Furthermore, analyses of refugees' labor market and welfare outcomes should consider their unique circumstances and differentiate them from other immigrants.

Keywords: Migration; Economics of Minorities, Races, Indigenous Peoples, and Immigrants; Labor Market; Human Capital; Unemployment Insurance; Refugees; Legal Status; Permanent Residency

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1 Introduction

Nearly 13 percent of Germany's population, or just over 10 million people, are first-generation immigrants (BAMF/BMI – Bundesamt für Migration und Flüchtlinge / Bundesministerium des Innern, 2019). Many immigrants moved to Germany in the 1950s and 1960s as part of "guest worker" programs, which recruited workers from a number of countries, primarily Turkey as well as several southern European countries, North African countries, and Yugoslavia. A large number of ethnic Germans also moved to Germany in the 1980s and 1990s, mainly from the Soviet Union, Poland, and Romania. Finally, nearly 2 million people applied for asylum in Germany between 2013 and 2018, more than 30 percent of all asylum applications in the EU, with the largest group arriving from Syria due to civil conflict (BAMF/BMI – Bundesamt für Migration und Flüchtlinge / Bundesministerium des Innern, 2019). Since the 2015 "summer of migration", Germany has emerged as a leading destination for migration to Europe.

Despite Germany's diverse immigrant populations, there has been little research investigating their use of welfare benefits. For the most part, the existing literature has focused on comparisons between immigrants and natives. These studies largely indicate that immigrants depend on welfare more than natives due to sociodemographic factors, including single parenthood and a larger number of children (Riphahn, 1998; Castronova, Kayser, Frick, & Wagner, 2001; Barrett & Maître, 2013; Bruckmeier & Wiemers, 2017). What has been somewhat overlooked is the gap in unemployment benefit receipt between immigrant groups. Wunder & Riphahn (2014) conducted one of the few studies comparing welfare benefit receipt between EU and non-EU citizens in Germany. They identify a pattern of higher welfare persistence among non-EU citizens compared to EU citizens. Although they attribute some of this pattern to differences in human capital and sociodemographic characteristics, non-EU immigrants exhibit a higher rate of welfare dependence even after accounting for these factors (Wunder & Riphahn, 2014). Furthermore, Wunder & Riphahn carried out their study before the 2015-16 refugee "crisis" and therefore do not draw conclusions about what is now one of the largest groups in immigration movements, asylum seekers. To date, the welfare receipt of different immigrant groups has not been investigated further.

The welfare use of refugees merits further investigation and comparison with the other two immigrant groups. Building on the work of Wunder & Riphahn, I compare predictors of unemployment benefits receipt between EU and non-EU citizens living in Germany, adding refugees to the analysis as a separate group. Using longitudinal data from the German Socio-Economic Panel (SOEP), a large-scale survey which allows me to analyze nearly 5,500 immigrants surveyed from the years 2013 to 2019, I examine predictors of welfare receipt for EU, non-EU and refugee immigrants in Germany. I include human capital and sociodemographic factors already shown to be significant in the existing literature.

I also include legal status, age at immigration, and years of residency in Germany, all important factors related to respondents' migration trajectories.

I consider especially the role of immigrants' human capital in predicting welfare receipt, and whether this relationship is affected by where immigrants come from and why they come to Germany. Human capital theory predicts that more education, work experience, and language skills should contribute to greater labor market success, lowering the likelihood of welfare receipt. However, immigrants' human capital may be valued differently in the German labor market depending on where it was acquired. Education and qualifications from one country may not lead to the same chances of employment as education and qualifications from another. While Wunder & Riphahn's results demonstrated that education is a strong predictor of systematic differences in welfare receipt between EU and non-EU immigrants, they did not compare the likelihood of welfare receipt between immigrants with the same education level. Extensive research in Western countries has indicated that immigrants from other Western countries enjoy greater labor market returns to education than those from non-Western countries (Basilio, Bauer, & Kramer, 2017; Lancee & Bol, 2017). As they migrate largely from non-OECD countries and under different legal and personal circumstances, I investigate whether returns to education may differ for refugees and other third-country immigrants compared to EU immigrants.

This article makes several important contributions to the literature on immigrant labor market integration. To the best of my knowledge, this is one of the first studies since the recent wave of refugees to compare human capital determinants of welfare use between immigrant groups in Germany. I provide evidence concerning the differences in returns to education between immigrant groups, supporting labor market integration policies directed at immigrants and refugees. Even after accounting for human capital, sociodemographic factors, length of residence in Germany, and even income, EU immigrants are least likely to receive welfare benefits and refugees remain the most likely. Such systematic differences between immigrant groups may be the product of discrimination, skill downgrading, or differences between host-country and destination-country education systems and labor markets. In addition, I find that highly educated refugees do not demonstrate significant labor market returns to their education, a further indication that their education and qualifications may be undervalued and underused. Finally, my results demonstrate that permanent residency may potentially support positive labor market outcomes across immigrant groups.

2 Theory and Hypotheses

2.1 Predictors of Welfare Receipt

Hohmeyer & Lietzmann (2020) attribute likelihood of welfare receipt to two mechanisms. For one matter, longer duration of welfare receipt might increase the likelihood of future benefit receipt. This is because welfare receipt decreases employment chances, both by sending a negative signal to potential employers (Blank, 1989; Lockwood, 1991) and by leading to human capital deterioration during extended periods of inactivity (Gregory & Jukes, 2001). Negative consequences for mental health and motivation can also contribute to a decrease in employment chances (Jahoda, 1982).

In addition, individuals with good prospects of employment are less likely to receive benefits. Many factors contribute to employment prospects, including job skills, the availability of employment support systems such as transportation and childcare, and mental health factors (Blumenberg, 2002). Finally, one major predictor of employment prospects is human capital (Mincer, 1958; Nickell, 1979; Mincer, 1991). Human capital theory anticipates better labor market outcomes among those possessing greater skills (Becker, 1964). Primarily through education, individuals increase their skills and therefore their likelihood of employment and higher wages (Nickell, 1979; Mincer, 1991; Cairó & Cajner, 2018). Other forms of human capital beneficial in the labor market include work experience (Mincer & Polachek, 1974) and host-country language skills (Chiswick & Miller, 2003).

2.2 Immigrants' Human Capital

Immigrants in Germany display heterogeneity in terms of human capital. While education levels are rising across countries of origin, immigrants from the EU tend to demonstrate higher education levels than other immigrants (Kogan, 2011; Gries, Redlin, & Zehra, 2021). Immigrants from non-Western countries demonstrate the greatest educational disadvantages (Brücker, Fendel, et al., 2016; Spörlein, Kristen, & Schmidt, 2020). Because of these differences, I hypothesize that *EU immigrants exhibit the lowest likelihood of welfare use* (H1).

Selection mechanisms can contribute to systematic variation in human capital between immigrants in different visa categories (Aydemir, 2011). Immigrants who migrate for work purposes are positively selected based on the skills and qualifications desired by employers (Kontos, 2011; Boeri, Brücker, Docquier, & Rapoport, 2012). As such, immigration processes are easier for those possessing certain human capital assets; there are even particular residence permits that enable highly skilled workers to more easily migrate to Germany (Cerna, 2013; Ellermann, 2020). Compared to economic immigrants, refugees are less positively selected on human capital as they migrate due to humanitarian rea-

sons (Chiswick, 1999; Dustmann, Fasani, Frattini, Minale, & Schönberg, 2017; Brell, Dustmann, & Preston, 2020) and therefore face labor market disadvantages (Aydemir, 2011; Bevelander, 2011; Salikutluk, Giesecke, & Kroh, 2016). This may be one explanation as to why refugees in Germany demonstrate lower average education levels than other immigrants (Brücker, Fendel, et al., 2016).

2.3 The Value of Education

Although substantial literature confirms that human capital is a significant predictor of welfare receipt, there is also a significant body of research indicating differences in returns to education for immigrants from different countries of origin. A key question is therefore whether human capital predicts welfare receipt to the same extent for all immigrants. There are several reasons why immigrants' human capital assets may bring them limited employment returns, including devaluation of origin-country human capital, skill mismatches, and discrimination.

For one matter, the human capital literature distinguishes between general human capital and country-specific human capital (Chiswick, 1978; Borjas, 1985; Friedberg, 2000). Significant research has established that origin-country human capital is not valued in the labor market as much as destination-country human capital (Schoeni, 1997; Friedberg, 2000; Bratsberg, Ragan Jr., & Nasir, 2002). Furthermore, the origin country matters. Non-Western degrees or degrees from countries with lower levels of economic development are associated with lower wages compared to degrees from Western countries (Lancee & Bol, 2017). Friedberg (2000) finds that returns to education are higher for immigrants from Europe and the Western Hemisphere than for immigrants from Asia and Africa. A recent analysis from Basilio & colleagues (2017) indicates that the native-immigrant earnings gap in Germany can be mostly explained by heterogeneity in returns to human capital by country, with higher returns for immigrants from high-income countries.

Such discrepancies in the value of origin-country human capital also manifest through legal degree recognition processes. Foreign degrees must be recognized by the government's Central Office for Foreign Education in order to enter many professions. Non-Western educational and professional qualifications are less likely to be granted recognition (Bauder, 2005; Brussig, Knuth, Brodkin, & Marston, 2013; Damelang & Abraham, 2016). Evidence indicates that degree recognition results in positive labor market outcomes in terms of employment and earnings (Brücker, Glitz, Lerche, & Romiti, 2021).

Educational credentials from different countries may be differently valued due to their actual or their perceived quality. Migrants from developed countries, which can devote more government resources to education, may enjoy a better quality of home country education, leading to greater cognitive skills

and consequently more job market success (Altinok, Angrist, & Patrinos, 2018). However, Lancee & Bol also suggest that employers perceive non-Western degrees and credentials to be of lower value. They refer to signaling theory to explain this valuation process. As employers do not have complete information about job seekers' skills and productivity, they use degrees and credentials as signals or cues on which to base hiring decisions (Spence, 1973; Weiss, 1983). In this manner, employers' notions of skill and qualification replicate historical inequalities between Western and non-Western countries (Nowicka, 2014). Lancee & Bol find that the lower wages of non-Western workers can be explained at least in part by the lower signaling value of non-Western degrees. A lack of recognition of educational credentials could lead to challenges finding employment or earning a sufficient income, increasing likelihood of welfare receipt. Because of these differences in the transferability of qualifications from Western and non-Western countries, I hypothesize *a greater negative effect of educational attainment on likelihood of welfare receipt for EU immigrants than for third-country immigrants and refugees* (H2).

2.4   Other Potential Explanations

There are several additional explanations for variation in returns to human capital by immigrant group, all of which may contribute to a gap in welfare receipt between immigrant groups that cannot be explained by human capital and sociodemographic factors. For one matter, differences between origin-country and host-country education systems and labor markets may lead to differences in returns to experience. Some studies have indicated that labor market returns to human capital are positively related to the sending country's GDP (Sullivan, 2010; Lagakos, Moll, Porzio, Qian, & Schoellman, 2012; Coulombe, Grenier, & Nadeau, 2014). Migrants from countries with labor markets similar to that of Germany potentially fit better into the German labor market in terms of jobs and skills needed (Duleep & Regets, 1999). Migrants from OECD and EU countries may also simply be more familiar with the German labor market system due to similarities with the origin country (Van Tubergen, Maas, & Flap, 2004; Beyer, 2017). Furthermore, not all immigrant-sending countries rely on professional training and qualification to the same degree as Germany (Souto-Otero & Villalba-Garcia, 2015). In many third countries, formal vocational training is much less common than in Germany and much fewer occupations require formalized training (Stoewe, 2017).

Immigrants who are unsuccessful in the labor market may be more likely to return home. However, evidence regarding the link between unemployment and return migration is mixed. Several studies have indicated that unemployment spells increase return probability across immigrant groups (Constant & Massey, 2002; Gundel & Peters, 2008; Bijwaard, Schluter, & Wahba, 2014). Others find that this relationship is more complicated, as social networks, perceived discrimination, and calculations of wage differentials between the origin and destination

countries can all contribute to return migration decisions (Borjas & Bratsberg, 1994; Waldorf, 1995; Tezcan, 2019). Freedom of movement within the European Union may enable EU immigrants to return home more easily if they fall upon hard times (Zaiceva & Zimmermann, 2016). However, refugees are unlikely to be able to quickly return to their country of origin due to ongoing violence and conflict.

Two other potential explanations are discrimination and age at migration. The existing research shows that third country immigrants experience greater discrimination based on ethnicity compared to EU immigrants (Ruiz & Vargas-Silva, 2004; Constant & Massey, 2005; Kaas & Manger, 2012; Thijssen, Lancee, Veit, & Yemane, 2021). A final potential reason for variation in labor market success between immigrant groups is age at arrival in the destination country. Several studies indicate that immigrants who arrive in the destination country at a younger age display better labor market outcomes in adulthood (Van den Berg, Lundborg, Nystedt, & Rooth, 2014; Lemmermann & Riphahn, 2018). This is because children can join the host-country school system and have greater opportunities to accumulate host-country human capital.

2.5 The Refugee Penalty

Building on previous research comparing the welfare use of immigrant groups, this paper adds refugees to the analysis. Studies conducted after the arrival of recent refugees have indicated a refugee labor market penalty that cannot be completely explained by differences in education level or sociodemographic factors (Bähr, Beste, & Wenzig, 2017; Söhn, 2019; Bedaso, 2021). Consequently, I hypothesize an *additional refugee penalty predicting higher likelihood of welfare benefit use, even after accounting for human capital and sociodemographic factors* (H3).

There are several potential explanations for the "refugee penalty". Discrimination is a possible factor: recent studies have indicated that even well-qualified refugees who have learned German still face challenges finding work and are evaluated not only based on their skills, but also on their country of origin. Employers frequently assume that refugees are less capable than other equally-educated immigrants (Khan-Gökkaya, 2021; Kloubert, 2021). In addition, mental health issues stemming from traumatic events may hinder the labor market integration of refugees (Ruiz & Vargas-Silva, 2018; Brell et al., 2020). Legal regulations governing residence and employment could negatively affect refugees' employment prospects as well. Employers may be less willing to hire refugees who have only received a delay of deportation (rather than protection status) due to the uncertainty that they will remain in Germany (Brücker, Kosyakova, & Schuß, 2016). In addition, employment prohibitions upon arrival in Germany can discourage asylum applicants from seeking work later once permission is eventually granted (Brell et al., 2020; Fasani, Frattini,

& Minale, 2021). Because of these additional potential barriers, I hypothesize that *the effect of educational attainment on likelihood of welfare receipt will have the lowest magnitude for refugees* (H4).

2.6 Germany's Welfare Regime

Two types of welfare benefits are available in Germany for unemployed adults of working age: Unemployment Benefits I (UB I) and Unemployment Benefits II (UB II). Eligibility for UB I is based on social security contributions. Recently unemployed workers who have contributed sufficiently to the welfare system receive a benefit amount calculated from previous earnings. Those who have exhausted their UB I benefit or who have not worked long enough to qualify for UB I can receive UB II. Rather than social security contributions, UB II is a means-tested benefit, meaning that eligibility is based on income and need. The benefit amount is set according to the number of people in the household, the number of children in the household, and the ages of the children. In general, all residents of Germany are entitled to UB II, excluding tourists, seasonal workers, and asylum seekers. Recipients are also required to be between the ages of 15 and 65 and be able to work at least 15 hours per week.

UB II receipt is conditional on receiving sufficient income to secure a minimum standard of living, but not conditional on employment. Individuals may be registered as employed but not earn enough to meet this minimum standard, and can therefore receive UB II to fill the gap. Conversely, unemployed individuals may not necessarily receive UB II if they have not applied or if the application process is incomplete. The relationship between unemployment and UB II receipt is therefore not always direct (Hohmeyer & Lietzmann, 2020).

EU citizens are broadly entitled to UB II in Germany under the Freedom of Movement Law (FreizügG/EU), a German national law derived from EU-level directives. There are some conditions upon recipiency: EU citizens cannot claim social security benefits for their first three months in Germany, as they are not permitted to enter Germany with for purpose of receiving welfare (Mantu & Minderhoud, 2017). To become eligible, they must either work and contribute to the social security system for at least one year or reside in Germany for at least five years. As of 2017, economically inactive EU citizens cannot receive any type of welfare benefit during their first five years in Germany (see *Bundesgesetzblatt* Nr. 65, *Bundesregierung* 12/28/2016). If they have worked for less than one year, they are entitled to a maximum of six months of UB II benefits (see *Bundesgesetzblatt* Nr. 65, *Bundesregierung* 12/28/2016).

Migrants from several countries outside of the EU are granted special access to the welfare system under the European Convention on Social and Medical Assistance of 1953. These countries include Iceland, Norway, and Turkey. Other third country immigrants living in Germany can be eligible if they have a resi-

dence permit and legal permission to work. However, UB II receipt can increase the risk rejection or delay of residency permit extensions or German citizenship applications (Schnabel, 2020).

Refugees who have officially received legal protection status fall under largely the same eligibility requirements for UB II as German citizens (see *Sozialgesetzbuch II - Grundsicherung für Arbeitsuchende* § 7 *Leistungsberechtigte, Bundesregierung* 12/24/2003). Finally, refugees waiting for an asylum decision (or those who possess a *Duldung*, or temporary suspension of deportation) are entitled to an asylum seekers' benefit (*Asylbewerberleistungsgesetz*, AsylbLG), rather than UB II. The above information on immigrants' eligibility for UB II is also available in the Supplementary Materials in Table S1.

3 Data and Methodology

3.1 Data

Data for my analysis are taken from the 2013-2019 waves of the core sample of the German Socioeconomic Panel (SOEP), a longitudinal panel dataset which includes representative samples of the German population (*Socio-Economic Panel (SOEP), data for years 1984-2019*, 2021). Running since 1984, the SOEP re-interviews adult household members annually and has frequently added new samples for the purpose of studying various social groups. My analytical sample includes all UB II-eligible heads of household with a direct migration background who were surveyed in the years 2013 through 2019. Some respondents have participated in the SOEP since its commencement, such as those from "Sample B 'Foreigners in the Federal Republic of Germany,'" which begun in 1984 and includes individuals in private households with a Turkish, Greek, Yugoslavian, Spanish, or Italian household head. Others entered the survey later, including "Sample D 'Immigrants,'" begun in 1994. In 2013 and 2015, two new Migration Samples were incorporated, one including those who immigrated to Germany after 1995 and the second including those who immigrated between 2009 and 2013 (*IAB-SOEP Migration Samples (M1, M2), data of the years 2013-2019*, 2021). Refugee Samples were added in 2016 and 2017 and surveyed individuals who arrived in Germany between January 2013 and December 2016 with an asylum application (*IAB-BAMF-SOEP Survey of Refugees (M3-M5), data of the years 2016-2019*, 2021). The analytical sample therefore includes individuals who have resided in Germany from less than one year up to more than 50 years.

Based on eligibility for UB II, I restrict the sample as follows: first, I include only first-generation immigrant household heads surveyed from the years 2013-2019. The sample is further restricted to those between the ages of 18 and

65^2 who are not on parental leave and not receiving old-age, disability or civil service benefits, as receipt of these benefits precludes UB II receipt. The sample is divided into three immigrant groups: those who migrated from EU countries, those who migrated from third countries, and those who arrived as refugees. Further detail regarding excluded cases is available in the Supplementary Materials (Table S2).

As legal status shapes eligibility for social benefits in Germany (Voigt, 2020), this is also a necessary sampling criterion. EU citizens only become eligible for UB II after either working for at least one year or residing in Germany for five years, so I exclude EU citizens who have lived in Germany for less than 5 years and do not have at least one year of full-time work experience.[3] Asylum seekers are excluded from the sample, as they are not eligible for UB II and receive asylum seekers' benefits instead. Asylum recipients are included as they are entitled to UB II.

3.2   Measurement

The dependent variable in the analysis is UB II receipt. UB II receipt is measured at the household level, with a binary indicator of 1 for benefit receipt and 0 for no benefit receipt. Like most of the variables in the SOEP, this variable is self-reported, based on questions asking households which benefits they are receiving and the amount that they receive. The independent variable and control variables are operationalized dependent on how survey questions are asked in the SOEP. Education level serves as the independent variable. Control variables for the various stepwise models include: unemployment experience; human capital factors including full-time employment experience and German language skills; sociodemographic factors including gender, number of children in the household, and single parenthood; and factors related to immigration including legal status, age at immigration, and length of time the respondent has resided in Germany.[4] Although I provide further details regarding these variables below, an additional table explaining the precise operationalization of model components is also available in the Supplementary Materials (Table S4).

The first variables to be added in the stepwise modeling process are the human capital variables. Education level is measured through the International Standard Classification of Education (ISCED), which provides a standardized cross-national qualification of educational degrees to capture educa-

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[2]While UB II recipients are required to be between the ages of 15 and 65, not 18 and 65, there are no immigrant household heads in the SOEP under the age of 18.

[3]Benefit regulations for EU citizens do not require that EU immigrants engage in full-time work as opposed to part-time work, but as the information available in the SOEP is based on full-time work experience, I rely on this variable as a measure of work experience for sample specification purposes.

[4]Age is not employed as a separate control variable because it is collinear with age at arrival.

tion obtained prior to arrival in Germany.[5] This measure is then simplified into three categories for analysis: basic education, which includes primary and lower secondary education; medium-level education, which includes upper secondary, post-secondary non-tertiary, and short-cycle tertiary education; and higher education, which includes bachelor's, master's, and doctoral degrees.

I also include work experience as a form of human capital. The "full-time employment experience" variable reflects the total length of full-time employment in the respondent's career up to the point of the interview. As Hohmeyer & Lietzmann (2020) attribute likelihood of welfare receipt to employment prospects as well as duration of welfare receipt to date, I also include length of time unemployed. The "unemployment experience" variable reflects the total length of unemployment in the respondent's career and is included to reflect Hohmeyer & Lietzmann's observation of the role of previous welfare receipt in predicting ongoing welfare receipt. Both variables measure length of time in years.

German language ability is a final component of country-specific human capital. I compile this variable from several similar questions about oral or spoken language abilities, all of which asked respondents to rate their language abilities on a scale of 1 to 5, with 5 being the highest ability; for some respondents surveyed in 2018, this question was not asked, and so I imputed language proficiency from 2017 based on the assumption that their oral German abilities would remain at least at the level of the previous year.

In addition to human capital factors, sociodemographic factors are added in the stepwise modeling process. A number of studies in the German context have indicated that a higher welfare participation rate among immigrants compared to natives is in large part due to sociodemographic factors (Riphahn, 1998; Castronova et al., 2001; Barrett & Maître, 2013; Bruckmeier & Wiemers, 2017). These factors also contribute to higher welfare receipt among non-EU immigrants compared to EU immigrants (Wunder & Riphahn, 2014). More specifically, single parenthood, a female household head, and a larger number of children increase risk of welfare dependence (Riphahn, 1998; Fertig & Schmidt, 2001; Anastossova & Paligorova, 2006). Considering this body of literature, I control for gender, single parenthood, and number of children in the household. The variable indicating the number of children is a categorical variable, with three categories: no children, one child, or multiple children.

Finally, several variables related to respondents' immigration trajectories are included in the models: legal status, age at immigration, and years of residence in Germany. Immigrants who arrive in the destination country at a younger age demonstrate labor market advantages for several reasons, including greater opportunities to gain language fluency, assimilate into the culture, join the ed-

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[5]Those at the lowest ISCED level (0) are still in secondary school; those at ISCED level 1 have completed primary education, while those at level 8 have completed a doctoral degree.

ucation system, and invest in other country-specific human capital (Friedberg, n.d.; Gustafsson, Mac Innes, & Österberg, 2017). Age at immigration is calculated using age and years of residence in Germany. Length of residence in Germany is calculated using survey year and immigration year.

Gathering legal status information from the SOEP required the use of several variables from various questionnaires that asked respondents about their residence permits to varying degrees of detail. Since respondents were not asked for detailed legal status information in every survey year, in some cases legal status was imputed from the previous year or a more general indicator of permanent or temporary residency was utilized instead.[6] Responses were consolidated into a measure indicating four residence statuses: 1) legal protection or refugee status, 2) permanent residency, 3) temporary residency, 4) unknown or none, with one percent of respondents in the last category. Refugee samples were generally asked more detailed information about their current residence permit than the migration samples or the general sample. Detailed legal status information and information about imputed values is available in the Supplementary Materials (Table S3).

The final dataset includes 10,355 person-year observations and 5,494 unique person observations. Of this sample, descriptive statistics for person-year observations are reported in Table 1.

3.3   Econometric Model

I employ logit random effects models in this analysis, with the binary outcome indicating whether the respondent is receiving UB II in the given survey year. Random effects models were chosen over fixed effects models due to insufficient within-individual variation. As I am interested in between-person variation, rather than within-person variation, random effects models were also a more appropriate fit. This structure allows for an examination of systematic differences between immigrant groups.

I first use stepwise models to examine predictors of welfare use among the three specified immigrant groups. Model 1, which only includes the immigrant group dummy variables, demonstrates the baseline difference between immigrant groups. Model 2 incorporates human capital factors including education, work experience, and German language skills. I also control for the time respondents have already spent unemployed. Survey year is also included to control for external economic conditions and any other time-specific effects. In Model 3, I

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[6]These more general indicators were utilized for approximately 40 percent of observations. Reported legal statuses with very few observations were consolidated with others; for example, 16 family reunification observations were combined with the more general subsidiary protection status, which applies equivalent regulations, and those with "applied for new residence permit" were consolidated with the "unknown" category.

add household composition, gender, and single parenthood in order to examine whether welfare use is largely a consequence of sociodemographic factors, as indicated by several previous studies (Riphahn, 1998; Castronova et al., 2001; Barrett & Maître, 2013; Bruckmeier & Wiemers, 2017). In Model 4 I add descriptors of respondents' migration experience, including legal status, age at immigration, and years of residence in Germany. To capture country effects, I also run separate models for each immigrant group with dummy variables for the largest countries of origin in order to ensure a sufficient number of observations in each country group; results of these models are available in the Supplementary Materials (Table S1).

Random effects models typically do not employ both time-variant and time-invariant variables together. However, the panel data includes a combination of independent variables that generally do not change for each respondent over time (such as gender) and variables that may change over time (such as full-time employment experience). To address this challenge, within-between random effects models (Allison, 2009, 2014; Bell, Fairbrother, & Jones, 2019) allow for a combination of fixed effects estimates of the effects of time-variant variables with random effects-type estimates of the effects of time-invariant variables. To measure the effects of these time-varying variables, I obtain the standard deviation of the variable by subtracting the mean of observations from its observed value in each survey year (Schunck, 2013). In this manner, I can estimate the effect of a change in this variable by one standard deviation.

In order to determine which variables were time-varying and therefore appropriate for this within-between random effects model treatment, I examined the percentage of respondents whose responses changed over time for each variable in the model. More detail about the percentage of individuals who experience change in any of the above variables is available in Table 2 below. As less than 5 percent of respondents indicated changes in education level, gender, number of children in the household, single parenthood, and legal status, these variables were treated as time-invariant. Age at immigration is also time-invariant as it is an event that occurred in the past. More than 10 percent indicated changes in their level of self-evaluated German language skills, full-time employment experience, and unemployment experience over the survey period. Years of residence in Germany also changes with each year of the survey period. These variables were thus treated as time-varying. In order to treat German language skills as time-varying, this variable was treated as continuous variable rather than as a five-point scale.

3.4 Results of Stepwise Models

The results of the within-between random effects logistic regressions allow for an examination of the effects of group-level characteristics over the survey period. Marginal effects of stepwise models are reported in Table 3, with regression

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results reported in the Supplementary Materials (Table S5). At the baseline, third country immigrants are 7.4 percent more likely to use UB II than EU immigrants; refugees are 45.3 percent more likely to use UB II than EU immigrants. After accounting for all independent variables, this difference decreases: third country immigrants are 6.5 percent more likely to receive benefits than EU immigrants, and refugees are 30.7 percent more likely to receive benefits.[7]. These results confirm hypothesis (H1), that *EU immigrants exhibit the lowest likelihood of welfare use*, as well as hypothesis (H3), that there is an *additional refugee penalty predicting higher likelihood of welfare benefit use, even after accounting for human capital and sociodemographic factors.*

Several human capital factors remain significant across models. Not unexpectedly, education decreases likelihood of UB II receipt. Immigrants with a medium level of education (-0.085, $p < 0.001$) are less likely to receive UB II than those with a low level, and immigrants with a high level of education are even less likely to receive UB II (-0.137, $p < 0.001$). While full-time employment experience remains a significant and negative predictor of welfare receipt across models, German language skills lack significance.[8]

Results of control variables related to sociodemographic characteristics are largely in line with the existing literature. Women (0.054, $p < 0.001$) and single parents (0.186, $p < 0.001$) display a higher likelihood of welfare receipt across immigrant groups. Having children in the household only becomes significant if there is more than one child (0.074, $p < 0.001$).

Finally, factors related to immigration significantly predict likelihood of welfare receipt; those who migrated to Germany at an older age are slightly more likely to receive benefits (0.006, $p < 0.001$), as well as those who have resided in Germany for a longer period of time (-0.022, $p < 0.01$). Although legal status is not the focus of this paper, it is observed that legal status also predicts UB II receipt, even after controlling for immigrant group. Most notably, permanent residency is related to a lower likelihood of welfare use (-0.090, $p < 0.001$). This finding corroborates previous evidence that permanent legal status or naturalization can potentially support immigrants' labor market success (Von Haaren-Giebel & Sandner, 2016; Gathmann & Keller, 2018; Riphahn & Saif, 2019). There are several possible mechanisms that may drive this relationship. Formal restrictions can limit temporary immigrants' access to certain jobs; employers may be more willing to hire immigrants who they know will stay in Germany; and immigrants may be further incentivized to invest in host-country

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[7]I also ran a model that included employment level, in order to control for whether some respondents may be engaged in work that does not generate sufficient income to rise above the poverty line. This model rendered full-time employment experience and gender insignificant

[8]I also ran a set of models, not reported here, that treat German language skills as a discrete variable with the above-mentioned five-point scale, instead of as a continuous variable. In those models, very good language skills significantly decrease likelihood of welfare receipt, but only before accounting for immigration-related factors, potentially indicating that length of residence in the destination country supports language acquisition.

human capital once they know they will stay. That said, further research is needed to determine whether this result may be due to selection effects, where the most economically successful immigrants are also able to secure permanent residence.

3.5 Results of Interaction Model

I then employ a model with an interaction term between immigrant group and education level in order to test hypotheses (H2) and (H4). All independent variables from Model 4 are also included in this model. Results are reported in Table 4 and confirm that education decreases the likelihood of welfare receipt for EU and third-country immigrants. Compared to the baseline category of low education, coefficients for medium and high education are generally significant and negative for all immigrant groups. The magnitude of these coefficients is similar for EU immigrants and third-country immigrants, with a medium level of education reducing likelihood of welfare receipt by 15.6 percentage points for both groups and a high level of education reducing likelihood of welfare receipt by 23.3 percentage points for EU immigrants and 23.7 percentage points for third-country immigrants. These results thus do not support hypothesis (H2), that there is *a greater negative effect of educational attainment on likelihood of welfare receipt for EU immigrants than for third-country immigrants and refugees.*

The effect of education on likelihood of welfare receipt is visibly smaller for refugees compared to the other immigrant groups. This outcome is illustrated in Figure 1. Furthermore, higher education does not have any additional effect on the likelihood of welfare receipt for refugees when compared to a medium level of education. Both medium and high education display the same impact on likelihood of welfare receipt (-0.062, $p < 0.01$). Due to the aforementioned "refugee penalty," I hypothesized that *the effect of educational attainment on likelihood of welfare receipt will have the lowest magnitude for refugees* (H4). My results support this hypothesis, demonstrating both a smaller effect of education overall and no significant effect of higher education.

Higher education may lack significance for refugees because their human capital is undervalued. Information on degree recognition among highly educated refugees is unfortunately inconclusive due to the high number of applications still in process at time of survey.[9] Possibly, delays in degree recognition may deter highly educated refugees from accessing the labor market. Those with

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[9]Degree recognition information is available for 85 percent of highly educated refugees in the sample. Among those for whom information is available, 56 percent of observations did not apply for recognition of their degrees. In total, information on the outcome of the degree recognition process is therefore available for a total of 425 observations. Of those observations, 48 percent reported that their degrees had been recognized, 1 percent that they had been partially recognized, 9 percent that they had been rejected, and 42 percent were still in progress.

higher education also tend to have lived in Germany for a shorter time than those with medium and low education. However, there are also several possible mechanisms that may impact the labor market outcomes of refugees more broadly. Discrimination leads to devaluation of their skills and qualifications (Khan-Gökkaya, 2021; Kloubert, 2021). Mental health challenges may hinder labor market integration especially among refugees (Ruiz & Vargas-Silva, 2018). Lengthy asylum procedures can also contribute to delayed employment even long after arrival in Germany (Schuss, 2019; Kosyakova & Brenzel, 2020). Conversely, more recently arrived and highly educated refugees might have been provided with additional assistance accessing social benefits or might have been able to navigate the welfare bureaucracy more easily due to their education and skills. Rather than indicating disadvantage, this possibility would indicate some advantage in terms of access to social benefits. The above factors are all possible explanations for the "refugee penalty" and merit further investigation.

4 Limitations

Several limitations of the study should be brought to attention. For one matter, many answers to questions asked in the SOEP are self-reported, which can lead to survey response bias (Stephan & McCarthy, 1958; Furnham, 1986; Lynn, Jäckle, Jenkins, & Sala, 2012). For example, respondents were asked to rate their own German language abilities. Other answers may have been affected by misconceptions, as some respondents may have confused different types of benefits (Bruckmeier, Riphahn, & Wiemers, 2021). Finally, recall bias (i.e., forgetting) or social desirability bias due to the stigma attached to welfare receipt could lead to underreporting (Moffitt, 1983; Bound, Brown, & Mathiowetz, 2001; Bruckmeier, Müller, & Riphahn, 2014; Krafft, Davis, & Tout, 2015).

A second limitation of the study is missing information. In order to better gauge labor market returns to origin-country education, it would have been beneficial if the SOEP had included complete information about whether degrees acquired abroad were recognized in Germany. However, this information is unfortunately not included in the SOEP for most of the analytical sample. Among those for whom this information was available (approximately 40 percent of the sample), immigrants with recognized degrees were significantly less likely to receive UB II even after controlling for education level. The SOEP also lacks information for the majority of the sample about whether education was obtained in Germany or in the origin country, as well as whether immigrants obtained additional education or training after arriving in Germany. Finally, the study does not capture whether respondents have other sources of income or support when unemployed.

A third limitation of the study is potential panel attrition. It is possible that some immigrants return to their home countries during difficult times, thus for-

going German welfare state benefits. This may be particularly common among EU immigrants, who do not have to travel as far to go home (Zaiceva & Zimmermann, 2016). Return migration could therefore lead to attrition especially among EU immigrants and an underestimation of their need for unemployment benefits.

Although my analysis utilizes longitudinal data, it provides limited insights into the long-term labor market trajectories of many immigrants. Whereas EU immigrants in the sample have resided in Germany for a median of 8 years and third country immigrants a median of 13 years, the refugees in the sample have resided in Germany for a median of 4 years. The SOEP is also an unbalanced panel with some variation in panel attrition in different samples, meaning that it does not provide a complete picture of each respondent's welfare receipt over the entire survey period (Siegers, Belcheva, & Silbermann, 2020). For these reasons, continued research could paint a better long-term picture of the labor market trajectories of immigrant groups.

Finally, the categorization of immigrants into three broad groups – EU natives, third country immigrants, and refugees – is not completely unarbitrary. Quantitative analysis requires some generalization of heterogeneous groups; even immigrants from the same region are characterized by a variety of migration motives, social conditions, degrees of human capital transferability, and so on. However, they do share commonalities based on legal status, country of origin, and other aspects of the migration experience itself, such as migrating within the EU or as a refugee. My categorizations bear similarity to other papers (Wunder & Riphahn, 2014; Söhn, 2019). That said, in order to address this limitation, regressions with dummy variables for the largest countries of origin are available in the Supplementary Materials (Table S6).

5 Discussion & Conclusions

Germany is now largely considered a "country of immigration," with more than one in ten residents lacking German citizenship (Federal Statistical Office, 2022). As its immigrant population continues to grow, the beneficiaries of the German welfare state continue to diversify. Immigrants arrive with educational qualifications from many different countries, a diversity of professional experience and training, and varied language skills. Policymakers will need to ask themselves how they can support a thriving labor market in a country of immigration. With such challenges in mind, my study aims to investigate the potential influence of human capital on UB II receipt for immigrants from various countries of origin and with different migration pathways. I investigate whether different immigrant groups exhibit different likelihoods of welfare use, the role of human capital in predicting welfare use for each group, and whether differences remain after accounting for human capital. My results have several implications for

labor market integration and welfare state policies, and point to several avenues for further investigation.

Overall results indicate that EU immigrants are the least likely to receive welfare benefits even after accounting for many of the predictors of welfare receipt in the literature, including human capital, sociodemographic factors, length of residence in Germany, and finally household income. This could be due to employment discrimination against immigrants from non-Western countries, which is well-established in the literature (Constant & Massey, 2005; Kaas & Manger, 2012; Thijssen et al., 2021). In addition, labor markets in OECD and EU countries may more closely resemble the German labor market or contain a similar level of professionalization of qualifications, i.e., through formal training and certification rather than informal work experience (Van Tubergen et al., 2004; Souto-Otero & Villalba-Garcia, 2015; Beyer, 2017).

This result also supports Basilio & colleagues' (2017) finding that immigrants from high-income OECD and European countries may enjoy greater returns to human capital than those from third countries. They argue that education from abroad is valued according to both the perceived quality of the education system and its comparability to the German one. The signaling value of education and qualifications for immigrants from Western countries is likely greater, thus easing the process of finding employment and gaining recognition of qualifications (Friedberg, 2000; Lancee & Bol, 2017). This result is also potential evidence of downgrading, when skilled immigrants are nonetheless placed in low-skilled jobs (Dustmann, Frattini, & Preston, 2013; Borjas & Monras, 2017). Skill downgrading is a topic ripe for further research due to a lack of comprehensive data on where immigrants obtained their education and qualifications. That said, my results potentially indicate that downgrading may have concrete implications for welfare use. Such differences in valuation of human capital by country of origin could indicate Eurocentrism and hierarchizing between Western and non-Western countries (Said, 1978). Labor market policies to support recognition of skills and qualifications that fall outside the usual structure and scope of the German system can help rectify such inequalities.

While differences in likelihood of welfare use persist across all three immigrant groups, the addition of human capital, sociodemographic, and migration-related factors across stepwise models decreases the magnitude of these differences. This result supports previous research by Wunder & Riphahn, who largely attribute disparities in welfare receipt to differences in education and family structure. However, like Wunder & Riphahn, I find that some disparities between immigrant groups still remain even after accounting for all these factors, with a much higher likelihood of welfare use among refugees. Further research on the welfare use of immigrants can therefore benefit from separating refugees from other third-country immigrants.

Besides skill downgrading and devaluation of human capital, it is also possi-

ble that refugees experience particular employment challenges that render their education insignificant. In contrast to other immigrant groups, refugees do not demonstrate significant labor market benefits from higher education, as they are no less likely to receive UB II than refugees with a medium level of education. This is possibly because recently arrived Syrian refugees, who may need additional time to integrate, are relatively well-educated compared to other immigrants (Brücker, Kosyakova, & Schuß, 2016). Furthermore, preliminary evidence indicates that highly skilled refugees suffer disproportionately from skill downgrading (Brücker et al., 2019; Nikolov, Salarpour, & Titus, 2021). Such findings point to a need for policy measures to ensure that refugees can enter the labor market more quickly by making use of education and training obtained in the country of origin.

Regardless of education level, refugees remain the most likely to receive UB II in all econometric models. This result is in line with those of Söhn (2017) and Schuss (2019), who find that asylum seekers face long-term labor market penalties, even after accounting for education and length of residence. Schuss attributes refugees' labor market disadvantages to their residency status upon arrival in Germany. Lengthy asylum application processing times, long time spans between arrival and permission to work, and insecurity about the future all may leave a lasting impact, resulting in a long-term income disadvantage (Söhn et al., 2017; Schuss, 2019). He also conjectures that skill downgrading can have a disproportionate impact on the earnings of asylum seekers. These several potential factors limiting refugees' employment prospects merit further research.

Although the aim of this study is not to explore the role of legal status in welfare use, some interesting results come to light when legal status is used as a control variable. Across immigrant groups, permanent residents are significantly less likely to receive welfare benefits than temporary residents. This finding is in line with previous research on the role of naturalization for labor market integration: several studies in Germany have indicated that naturalization can lead to positive labor market outcomes (Von Haaren-Giebel & Sandner, 2016; Gathmann & Keller, 2018; Riphahn & Saif, 2019; Brunow & Jost, 2021). The labor market implications of permanent residency have received little scholarly attention. Jutvik & Robinson (2020), in Sweden, find that refugees who are granted permanent residency demonstrate poorer labor market outcomes than temporary residents. At the same time, they also find that permanent residency can incentivize investment in country-specific skills such as language and vocational training (Gathmann & Keller, 2018; Jutvik & Robinson, 2020). Dustmann (1993) theorizes that immigrants are more likely to invest in host-country human capital if they can expect to remain in the destination country, potentially reducing the long-term risk of welfare receipt (Dustmann, 1993; Duleep & Regets, 1999; Cortes, 2004). Naturalization or permanent residency can also make immigrants more attractive hires for employers (Von Haaren-Giebel & Sandner, 2016; Riphahn & Saif, 2019). Finally, while temporary residents re-

ceive only conditional labor market access, permanent residents and recognized refugees are generally permitted to take any job (Etzold, 2017; Gathmann & Keller, 2018; Brunow & Jost, 2021). Overall, my results support the notion that a secure legal status can function as a form of human capital and contribute to reducing labor market disadvantages (Bauder, 2008; Schuss, 2019). However, further research is needed to determine whether my results are driven by selection effects: possibly, those who succeed in the labor market are more likely to be granted permanent residency. As Gathmann & Keller (2018) and Riphahn & Saif (2019) both find gender differences in the effects of naturalization on employment outcomes, future studies should also take this factor into account.

Considering the empirical evidence on the role of legal status, immigration reforms can support immigrants' labor market outcomes. Though policy goals regarding the legal status of immigrants may remain divided, labor market integration is generally in the interest of both immigrants and host country welfare states. The 2016 Integration Act determined that recognized refugees would be granted permanent residence after five years instead of the previous threshold of three years (Hanewinkel & Oltmer, 2018). My results and the existing body of research suggest that such restrictions on permanent residency may hinder rather than facilitate labor market integration.

This paper focuses on the role of human capital in predicting likelihood of welfare receipt. In exhibiting differences in returns to human capital by immigrant group, I also demonstrate that immigrants' labor market outcomes are influenced by much more than their education and work experience. For one matter, their livelihoods are shaped by the legal contexts within which they operate (Sainsbury, 2012). Policymakers concerned with immigrants' labor market integration therefore cannot ignore the promises of a future in Germany that secure legal status can provide. In addition, labor market trajectories may be affected by the replication of long-standing systemic inequalities that place value on human capital from some countries above human capital from others. If the goal of integration measures is to maximize immigrants' labor market outcomes and minimize the need for welfare benefits, measures to ease the transferability of origin-country human capital can support this goal. Policy changes such as recognition of foreign degrees, facilitation of labor market entry for those with foreign education, and validation of informal work experience would require a revision of what are considered acceptable and desirable qualifications in the German labor market. Such measures would reflect new conceptions of immigrant integration as a two-way process, whereby both newcomer minorities and the native majority are both expected to adapt to each other (Hellgren, 2015; Klarenbeek, 2021). Finally, the results of this analysis indicate that refugees still demonstrate higher levels of welfare use even after accounting for human capital, sociodemographic factors, and migration-related factors such as legal status. Further research should explore potential explanations for this gap, including delays in labor market entry, devaluation of human capital, discrimination, mental health challenges, or even policy measures that facilitated their

access to welfare state benefits. Continued study of the refugee penalty should help policymakers ensure that immigrants, regardless of nationality, are able to enter the labor market successfully and use the human capital skills they already possess.

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Table 1. Descriptive statistics of variables for full sample and immigrant groups.

	(1) Full sample (% or mean)	(2) EU (% or mean)	(3) Third country (% or mean)	(4) Refugee (% or mean)
Receiving UB II	36.11	13.35	23.43	58.13
Employment level				
Full Time	26.48	42.88	33.86	11.96
Part Time	21.98	25.75	27.77	16.53
Unemployed	51.54	31.37	38.37	71.51
Years of residence in Germany	9.79	11.76	15.41	5.61
Age at immigration	29.43	29.41	25.63	31.40
Number of children				
None	43.05	49.20	40.24	40.49
One	18.45	24.41	22.37	12.53
Multiple	38.50	26.40	37.39	46.98
Single parent	8.57	6.93	9.87	8.97
Sex				
Male	59.50	48.62	48.88	72.08
Female	40.50	51.38	51.12	27.92
Age	39.22	41.17	41.04	37.01
Legal status				
Asylum recipient	36.16	––	––	78.42
Permanent	51.32	96.15	72.15	11.29
Temporary	11.42	3.85	27.85	7.90
Unknown or none	1.10	––	––	2.39
Education level (ISCED)				
Primary	20.10	4.65	7.67	36.59
Lower secondary	17.90	13.34	18.07	20.80
Upper secondary	24.36	28.90	28.95	18.91
Post-secondary non-tertiary	10.54	19.37	11.98	4.02
Short-cycle tertiary	0.50	0.77	0.49	0.34
Bachelor's or equivalent	20.80	22.35	24.81	17.72
Master's or equivalent	3.97	8.05	5.85	0.34
Doctoral or equivalent	1.83	2.57	1.99	1.28
Full-time employment (years)	10.85	13.30	11.40	8.97
Unemployment (years)	1.64	0.94	1.63	2.10
Language abilities				
None ("gar nicht")	1.02	0.48	0.57	1.61
Rather poor ("eher schlecht")	11.16	8.05	8.00	14.83
Okay ("es geht")	32.45	25.37	29.27	38.71
Good ("gut")	35.44	38.58	33.62	34.33
Very good ("sehr gut")	19.92	27.52	28.54	10.52
Survey year				
2013	7.49	10.81	13.84	2.05
2014	4.65	7.15	8.20	1.17
2015	10.32	17.86	15.83	2.56
2016	8.92	14.66	13.97	2.58
2017	13.55	16.87	13.89	11.21

2018	29.07	17.90	18.68	41.73
2019	26.00	14.75	15.59	38.71
States				
Schleswig Holstein	3.52	1.41	3.78	4.75
Hamburg	2.60	2.21	3.82	2.22
Lower Saxony	8.76	7.67	8.73	9.49
Bremen	1.26	0.45	1.18	1.82
Northrhine-Westphalia	24.40	22.61	27.57	23.94
Hesse	9.85	9.17	11.37	9.51
Rhineland Palatinate	5.49	6.54	4.83	5.13
Baden-Wuerttemberg	13.18	16.04	12.38	11.73
Bavaria	15.55	21.01	14.13	12.71
Saarland	1.76	1.25	0.85	2.56
Berlin	4.73	6.00	4.10	4.23
Brandenburg	1.89	0.83	1.38	2.85
Mecklenburg West Pomerania	0.91	0.51	0.28	1.49
Saxony	2.25	1.73	1.87	2.79
Saxony-Anhalt	1.65	0.64	1.62	2.33
Thuringia	2.21	1.92	2.11	2.45
Region of Country of Origin†				
EU Old	10.21	33.77	--	0.08
EU New	19.80	64.98	--	0.50
Europe Other	0.96	1.25	1.87	0.29
Turkey	5.96	--	22.05	1.55
Ex-Yugoslavia	5.63	--	14.05	4.96
Former Soviet Union	8.77	--	31.38	2.83
Middle East North Africa	33.68	--	8.32	68.77
North America	0.52	--	2.19	--
South America	1.24	--	5.03	0.08
Africa	5.55	--	4.87	9.53
Asia	7.55	--	9.66	11.40
Oceania	0.14	--	0.57	--
N	*10,355*	*3,118*	*2,463*	*4,774*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Categorizations derived from the World Bank Databank: https://data.worldbank.org/

Table 2. Within variation of variables.

	Within standard deviation	Percentage of person observations for whom value changes during survey period ($N = 5{,}494$)
Unemployment benefits II receipt	0.217	10.52
Unemployment experience	0.257	12.23
Education level	0.054	0.82
Full-time employment experience	0.492	14.87
German language skills (spoken)	0.322	11.08
Gender	0	0
Number of children	0.178	4.55
Single parenthood	0.081	1.48
Legal status	0.177	2.82
Age at immigration	0	0
Years of residence in Germany	0.870	45.21

Table 3. Likelihood of welfare receipt of immigrants in Germany, marginal effects, stepwise modeling with full sample.

	Model 1 dydx (se)	Model 2 dydx (se)	Model 3 dydx (se)	Model 4 dydx (se)
Immigrant group (ref = EU immigrants)				
Third country	0.074*** (0.013)	0.073*** (0.014)	0.062*** (0.013)	0.065*** (0.015)
Refugee	0.453*** (0.012)	0.403*** (0.015)	0.404*** (0.015)	0.307*** (0.023)
Unemployment experience	--	0.094*** (0.012)	0.098*** (0.012)	0.118*** (0.013)
Education level (ref = low education)				
Medium education	--	-0.096*** (0.013)	-0.083*** (0.013)	-0.085*** (0.013)
High education	--	-0.142*** (0.014)	-0.121*** (0.013)	-0.137*** (0.013)
Other human capital				
Full-time employment experience	--	-0.077** (0.009)	-0.071*** (0.009)	-0.046*** (0.011)
German language abilities (spoken)	--	-0.013 (0.010)	-0.013	-0.011 (0.009)
Sociodemographic factors				
One child	--	--	0.005 (0.014)	-0.009 (0.014)
Multiple children	--	--	0.094*** (0.011)	0.074*** (0.011)
Female	--	--	0.057*** (0.011)	0.054*** (0.011)
Single parent	--	--	0.169*** (0.019)	0.186*** (0.019)
Legal status (ref = temporary residency)				
Recognized refugee	--	--	--	-0.013 (0.023)
Permanent residency	--	--	--	-0.090*** (0.018)
Migration-related factors				
Age at immigration	--	--	--	0.006*** (0.000)
Years of residence in Germany	--	--	--	-0.022** (0.007)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† indicates time-changing variables

Table 4. Models with interaction terms.

	dydx (se)
Interaction term: education level & migrant group (ref = low education)	
Medium education, EU migrant	-0.156*** (0.026)
Medium education, third country	-0.156*** (0.027)
Medium education, refugee	-0.062** (0.020)
High education, EU migrant	-0.233*** (0.025)
High education, third country	-0.237*** (0.027)
High education, refugee	-0.062** (0.021)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$