Opportunities or Benefits: Local Conditions and Refugee Labor Market Integration

Valentin Wett, Katia Gallegos Torres, Andreas Steinmayr*

This version: October 21, 2024.

Abstract

We jointly analyze the effects of variations in labor demand and the generosity of welfare benefits at the time of receiving protection on the labor market integration and location choice of refugees. Due to a series of reforms, initially, exogenously dispersed refugees face substantial differences in benefit levels and labor demand - but are free to move after receiving protection. Higher labor demand increases employment rates, while higher benefits have a small negative effect. These effects last for 2.5 years. However, both shocks persistently affect internal migration. Finally, changes in benefit levels have larger effects on employment when labor demand is high.

JEL codes: F22, J31, J61

Keywords: Immigrant integration, refugees, welfare benefits, labor demand

*We would like to thank Olof Åslund, Cevat Aksoy, Frederic Docquier, Martin Fernandez, Tina Hinz, Michael Siegenthaler, Jan Stuhler, and participants of various seminars and workshops for helpful comments and suggestions. Andrea Buchacher and Karolina Hanger provided valuable research assistance. We acknowledge the financial support by the Faculty of Economics and Statistics at the University of Innsbruck. Gallegos Torres acknowledges financial support from the German Federal Ministry of Labor and Social Affairs through the Fördernetzwerk Interdisziplinäre Sozialpolitikforschung (FIS) under grant number FIS.00.00140.19. The computational results presented here have been achieved using the LEO HPC infrastructure at the University of Innsbruck. All remaining errors are our own.
Contact: Valentin Wett, University of Innsbruck valentin.wett@uibk.ac.at; Katia Gallegos Torres, IAB Nuremberg, ZEW Mannheim and University of Innsbruck Katia.Gallegos-Torres@iab.de; Andreas Steinmayr, University of Innsbruck, CESifo, CReAM, IPL and IZA, andreas.steinmayr@uibk.ac.at.

1 Introduction

Integrating refugees into a host country's economy and society is a significant policy challenge in many countries (Brell et al., 2020). Policymakers deploy a range of strategies not only to enhance integration but also to achieve additional goals, such as directing migrant flows, optimizing resource use, and sustaining public support for hosting refugees.[1] Some policies, such as dispersal policies, limit refugees' choices by allocating them across various regions. Others seek to incentivize specific behaviors, such as encouraging labor force participation by reducing welfare benefits. Nevertheless, integration also depends on factors beyond policymakers' control, such as the labor market's capacity to absorb additional workers. Crucially, successful integration hinges on refugees' responses to these labor market conditions and policies. Understanding how refugees react to different policies and how these policies interact is essential for crafting effective integration strategies (Adda et al., 2022).

Using detailed register data, we study how refugees react to the conditions they face when their choice set expands. We jointly examine refugees' internal mobility and labor supply responses to local labor demand and welfare benefit levels by themselves, and their interaction. Three features make Austria such a compelling setting for this research project. First, the combination of a dispersal policy with strong restrictions for employment and relocation during the asylum process and no restrictions from the moment of protection allows for combining exogenous variation in conditions with observing refugees' behavior under an unrestricted choice set. Second, most refugees need to leave the accommodation provided during the asylum process within four months, requiring them to make consequential choices in a short time frame. As a result—depending on the labor market conditions and welfare benefit levels they face—refugees might be "forced" to quickly enter the labor market. This incentive could resemble the results of work-first policies (Arendt, 2022; Arendt and Bolvig, 2023). Third, the federal welfare system creates large differences in benefit generosity. After receiving protection, refugees are free to move between states and enter another state's benefits system.[2] Hence, if refugees are welfare-maximizers, we would expect them to be responsive of the various benefits levels across states.

We show that many refugees immediately change their location once they are allowed to do so: about 30% of the refugees initially placed outside the capital, Vienna, move to Vienna within four months, despite Vienna having a particularly low labor demand. This decision is influenced by both labor demand and welfare generosity in the location where they were initially placed.

[1] We use the term refugee for an individual whose asylum application was approved (Hatton, 2020). We use the term asylum-seeker specifically for a person before being granted protection.

[2] For example, a single asylum-seeker obtaining subsidiary protection in Carinthia in 2015 would only receive 200 euro in basic subsistence support, while moving to Tyrol or Vienna would more than triple this allowance.

Labor demand, especially in occupations with low entry barriers, strongly and immediately increases labor force participation among men. This, in turn, increases the likelihood of staying in the assigned state. While the effect on labor force participation is temporary, location choice is affected permanently.

Higher benefit levels also reduce the likelihood of relocation but the effect size is relatively modest. An increase in benefits by 300 euro decreases the likelihood of relocation by about three pp. Higher benefit levels temporarily reduce employment levels of men and more persistently for women. However, the effects are again small, with a 300 euro increase in benefits leading to a 1.51 pp. reduction in the employment rate after one year. Finally, we show that changes in welfare benefit levels have stronger effects on employment rates when labor demand is high, corroborating a similar finding for Denmark (Dustmann et al., 2024).

In simultaneously looking at relocation and employment, we demonstrate that increased labor demand encourages refugees to stay in the state and secure employment rather than relocate to another state without employment. Higher benefit levels have a negligible negative impact on the probability of securing employment in the initial state but increase the propensity of remaining without employment instead of moving and being unemployed elsewhere. In general, our evidence suggests that mobility responses to these economic variables likely reflect adaption to short-term needs and not longer-term optimization with respect to labor market prospects. Thus, the combination of a dispersal policy with subsequent unrestricted mobility does not contribute to greasing the wheels of the labor market (Borjas, 2001).

We contribute evidence to several active and urgent academic and policy debates by 1) assessing the extent to which favorable local labor market conditions and modifications in welfare benefits enhance labor market integration; 2) examining the degree to which variations in labor market conditions and benefit generosity induce within-country relocation; and 3) exploring how the effects of changes in welfare benefits interact with labor market conditions.

We now turn to a more detailed description of our setting, data, methodology and results. We use administrative data, which contains the full labor market trajectories, social security insurance spells and place of residence for over 40,000 refugees arriving in Austria from 2011 to 2018. Identification is based on the initial exogenous distribution and the restrictions during the asylum process. Variation in labor demand and benefit levels over time and space allows us to identify their effects separately but also study how they interact. Unlike related studies (Ferwerda et al., 2023; Dustmann et al., 2024; Azlor et al., 2020), we can use spatial and temporal variation in labor demand *and* benefit levels, which allows us to better control for potential regional confounders.

The data includes comprehensive and detailed information on job openings, which helps us assess labor demand by quantity and type of jobs in their assigned regions. Additionally, refugees encounter heterogeneous welfare benefits set by federal states, which underwent several reductions between 2015 and 2017, though the courts later overturned some of these cuts. Consequently, benefit levels differ markedly across states, over time, and according to the type of protection granted.

Our main findings are as follows. An interquartile increase in local labor demand, equal to 0.2 additional open positions per unemployed person, increases the employment probability 12 months after protection by about 4.2 pp and consequently reduces welfare use. The effect dissipates after 30 months. Effects on earnings are driven by higher employment and not by higher wages. Higher labor demand increases the probability of remaining in the state of assignment and reduces the probability of moving to Vienna, the preferred destination of refugees who move within Austria. The effect of higher benefits is mirrored but small: 100 euro higher benefit levels reduce the employment probability 12 months after protection by 0.5 pp. and monthly earnings by about 10 euro. Consequently, changes in benefit levels result in large changes in disposable income. However, the effects on employment dissipate after about 2.5 years. At the same time, 100 euro higher benefit levels persistently increase the probability of remaining in the state by about one pp. Neither local labor demand nor benefit levels affect the propensity to leave Austria entirely.

Similar to Dustmann et al. (2024), we find that the effects of labor demand and benefit levels interact in significant ways. The effect of a reduction in benefit levels on employment after one year is large when labor demand is high and negligible otherwise. Conversely, lowering benefits when labor demand is high reduces the take-up of benefits but has no effect if labor demand is low.

We make contributions to several strands of literature that are usually studied in isolation but are nonetheless closely interlinked.

Location choice of immigrants. The question of how immigrants choose a location has received extensive attention in the literature but several questions remain contentious, such as to what extent differences in welfare benefits and labor demand influence this decision. An empirical regularity observed in many contexts is that immigrants tend to cluster in large cities (Monras, 2023). Our context is no exception with the widespread relocation to Vienna as soon as this is possible. This phenomenon has been explained with higher place utility offered by cities, e.g., through the existence of ethnic enclaves but also amenities such as educational institutions (Damm and Rosholm, 2010). Another potential explanation is that migrants choose

high-cost-high-income cities as they consume a smaller share of their income in this location and thus benefit disproportionally from the higher wages (Albert and Monras, 2022). The labor market is unlikely to play an important role as a pull factor in our context. Vienna is one of the locations with the lowest labor demand, especially for low-skilled jobs; average wages for blue-collar workers are below the Austrian average (30,509 vs. 35,564 euro)[3]; and refugees in Vienna have some of the lowest employment rates in the country.

Given the strong concentration of refugees in one destination within Austria, we do not seek to identify which factors attract them to a certain destination (pull) but rather which factors of their assigned location push them away. Such push models have been used to learn about immigrants' location preferences, but for causal identification, they require exogenous placement into initial locations (Damm, 2009), which is the case in our setup.

Borjas (2001) argues that migrants, who are less attached to a particular location and thus have lower moving costs, contribute to *greasing the wheels* of the economy by not moving to areas where their skills are not in demand. Migrants reacting to local conditions with outmigration/staying is part of greasing the wheels. Our results suggest that migrants do react to the availability of jobs in their initial region. However, these appear to relax their short-term constraints and are not the result of longer-term optimization of their earnings potential.

We also contribute to the question of whether the generosity of welfare benefits affects immigrants' location choices—known as the *welfare magnet hypothesis* (Borjas, 1999). This question has received considerable attention. Agersnap et al. (2020) study the same Danish reform as studied in Dustmann et al. (2024) and show that the benefit reduction reduced migrant inflows with an implied elasticity of 1.3. At the sub-national level, Ferwerda et al. (2023) study for Switzerland, how the generosity of benefits in the place where refugees were initially placed affects their subsequent relocation. This push approach is very similar to ours. They find that higher benefits decrease the incidence of relocation, but only to a minor extent. At most, by two pp., even for very large differences in benefits. Our estimates of a roughly one pp. change for a 100 euro change in benefits is considerably larger. Exploiting some of the same reforms that we look at, Huber and Dellinger (2022) find in an event study approach that reductions in benefit levels trigger significant outmigration.

Effect of initial labor market conditions. Our findings on the effect of labor market conditions when entering the labor force complement active literature on initial conditions' (long-term) effects for refugees (Åslund and Rooth, 2007; Godøy, 2017; Fasani et al., 2022; Aksoy et al., 2023) and immigrants more generally (Chiswick et al., 1997; Chiswick and Miller,

[3] `https://www.statistik.at/fileadmin/publications/Allgemeiner_Einkommensbericht_2020.pdf`

2002; Barsbai et al., 2024).[4] Our detailed administrative data on vacancies and unemployment allows for several refinements compared to previous work. First, we consider the conditions in the district and time of receiving unrestricted labor market access instead of at arrival and thus better capture the relevant moment.[5] Second, we use the initial vacancy-to-unemployment ratio ($IVUR$) instead of employment or unemployment ratios because it might be a better measure of local labor demand conditions (Dustmann et al., 2024). In particular, the measure provides us not only with information on the general state of the labor market but we can identify labor demand for particular skills or individual sectors. Third, variation over time and space allows us to not only rely on cross-sectional variation but also to control for other unobserved regional characteristics that could be correlated with $IVUR$ and confound our results. Fourth, we can also look at the effects on a monthly level, finely capturing any dynamics playing out immediately after getting access to the labor market. Relative to the majority of findings in this literature, we find that the effects of initial labor market conditions on employment are not persistent beyond 2.5 years. This is likely due to a situation where labor supply decisions and location choice have to be made simultaneously. Conditions right after receiving protection are important to find employment and subsequently housing.[6] Several factors might explain our short-lived effects. First, the good labor market conditions at arrival could push refugees into employment too fast and "hinder" investments in host-country-specific human capital, which would, otherwise, payout in the future (Battisti et al., 2022). Second, refugees in Austria are particularly mobile, and the importance of initial local conditions fades away. We also study how initial labor demand affects mobility and find persistent effects on the probability of staying in the assigned location.

Effect of welfare generosity. Moreover, our work also contributes to a small literature studying the link of welfare generosity and labor market conditions on the integration and welfare use by immigrants (Bratsberg et al., 2020). In the most closely related paper, Dustmann et al. (2024) study the role of refugee benefit cuts in Denmark in an RD setting. The initial positive employment effects disappeared after 4-5 years. The results further show that the

[4] von Wachter (2020) provides a summary of the findings of graduating during different points of the business cycle on life outcomes: On average, entering the labor market in a recession reduces earnings, and these effects persist for up to 15 years, with large heterogeneities by socio-demographics (e.g., education, race, sex). For Austria, Brunner and Kuhn (2014) find that for labor market entrants during 1978-2000, a one pp. higher initial local unemployment rate decreases wages by about 1.3% over the life cycle and persists for 20 years after labor market entry.

[5] Åslund and Rooth (2007) discuss which is the relevant initial labor market area since refugees do not immediately enter the labor market.

[6] The only other study we are aware of to analyze the effects on mobility is Barsbai et al. (2024), which finds that family migrants in the U.S. do not move in response to adverse economic conditions. However, unlike refugees, family migrants have strong personal links to the location of initial residence, making any moves more costly.

effect is larger in regions with higher labor demand. Similar to this study, we also identify the interaction of the effect of these two factors. Our findings corroborate the conclusion of Dustmann et al. (2024) as we also see that changes in benefit levels have larger effects on employment rates and welfare use when labor demand is high.

More broadly, our paper expands on previous literature by looking at the interaction of local conditions and the policies in place. Although several studies have recognized the need for this approach (e.g., Fasani et al., 2022; Müller et al., 2023), few have incorporated both elements in their analysis. Recent work has examined the combined role of initial labor market conditions and hostile attitudes toward immigrants (Müller et al., 2023; Aksoy et al., 2023; Schilling and Stillman, 2021), but aside from Dustmann et al. (2024), none have focused on the interaction with welfare policies.

The rest of the paper is organized as follows. Section 2 provides information on the Austrian asylum system, the dispersal policy, and the welfare benefits for refugees. Section 3 describes the data, sample, and key variables. Section 4 describes the empirical strategy. Section 5 presents the results, and Section 6 concludes.

2 Institutional Background

Application for international protection

Refugees are allowed to apply for asylum as soon as they arrive in Austria. Upon application submission, authorities clarify whether Austria is responsible for handling the asylum application, as per the Dublin III Regulation. During this period, which usually takes days or a few weeks, asylum-seekers are hosted in initial reception facilities.

If Austria is found to be responsible for processing the application, applicants receive factual deportation protection. This means they are allowed to remain in Austria until a decision on their application is made. In such cases, the Federal Office for Immigration and Asylum (Bundesamt für Fremdenwesen und Asyl, or BFA), an authority directly subordinate to the Federal Ministry of the Interior (BMI), is primarily responsible for conducting asylum and foreign law procedures in the first instance. The BFA aims to decide on each asylum application within six months, although this time frame was often exceeded during the peak periods of the 2015 refugee crisis.[7]

[7] In our sample, asylum-seekers waited, on average, 13 months between arrival and a decision on their application.

Dispersal policy and labor market access

During the asylum process, asylum-seekers are allocated to various Austrian states according to a state quota. The Bundesbetreuungsagentur (BBA) manages and determines these quotas according to each state's population. States that do not meet their quota are preferentially contacted to receive new asylum-seekers. Since the states rely on municipalities to provide accommodation, they can reject requests if suitable accommodation is unavailable. While municipalities cannot discriminate against individuals, they can express preferences based on personal attributes like family status or gender.[8] For instance, smaller municipalities with only a single facility to accommodate refugees might impose restrictions due to the availability of only single rooms or the absence of childcare facilities.

Once assigned to a state and municipality, asylum-seekers receive basic subsistence support (*Grundversorgung*), which covers essential living expenses. This support is tied to the state of initial assignment, effectively preventing asylum-seekers from moving to another state until they receive international protection. The basic subsistence support guarantees housing provisions. Refugees can opt for private housing within the state without forfeiting their basic subsistence support. However, the financial aid provided in such scenarios is minimal. This limited financial assistance makes relocation within a state very unlikely, and refugees mostly remain in the assigned municipality.

Access to the Austrian labor market for asylum-seekers is highly restrictive. The "Bartenstein-Erlass", a decree issued by the Ministry of Labor in 2004, has limited labor market access for asylum-seekers to seasonal positions in the agricultural and tourism sectors, with very few other exceptions. This limitation is evident in the employment rates and monthly wage incomes, which are close to zero before individuals receive a protection status. Figure 2 (a) shows that employment rates at the moment of receiving a protection status are effectively zero.

Once refugees receive protection as convention refugees or subsidiary-protected individuals, they gain full access to the labor market. At the same time, both types of protection grant individuals the freedom to choose their place of residency within Austria. Figure 2 (b) shows that within four months of receiving protection, about 30% of refugees relocate to a different state.

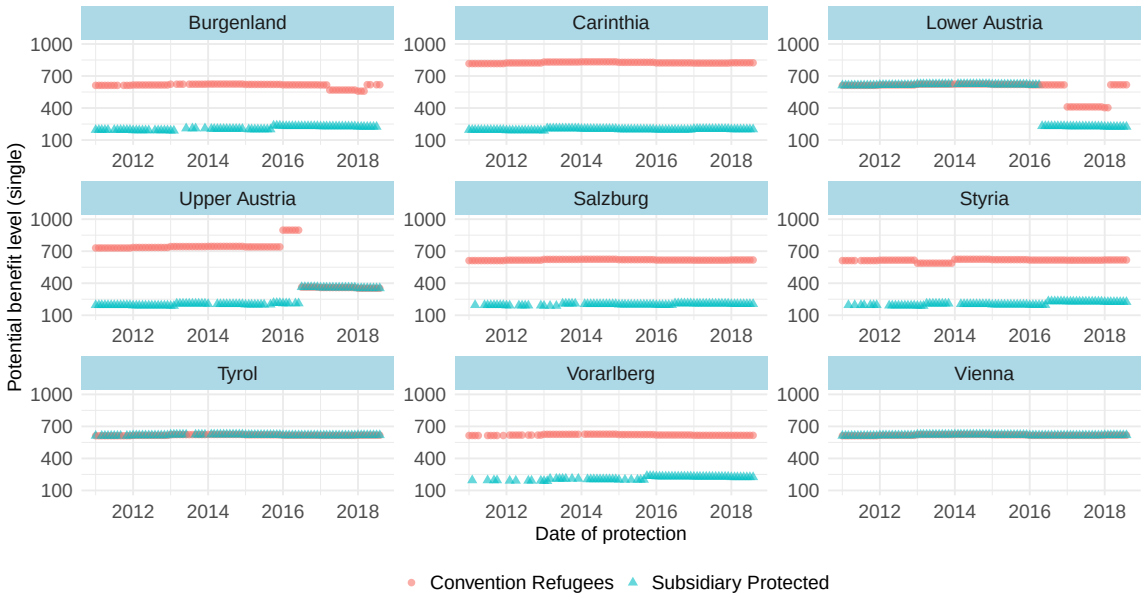
[8] Although this is not formally stated by law, we have this information from interviews with multiple experts. They mentioned that municipalities are just asked to accept a particular group of people. However, they do not know who exactly are they going to host.

Welfare system

However, there are differences in the type and extent of benefits they receive. Convention refugees typically become eligible for *Bedarfsorientierte Mindestsicherung* (BMS - minimum income support) four months after receiving protection. Those with subsidiary protection in many states remain in the basic subsistence support (*Grundversorgung*). In most cases, basic subsistence support is associated with lower financial support. In the decentralized system, federal states have significant leeway over the welfare generosity for refugees. Several states implemented reforms that drastically altered benefits. We hand-coded data on the welfare system in place in each state between 2011 and 2019. Appendix B.2 provides an overview of the welfare system for refugees. Figure 1 shows the amount of monthly benefits for a single refugee in the various states. A corresponding graph for families of four is shown in Figure A.1 in the Appendix. These are the benefits provided for covering the cost of living. They exclude housing support, which is organized quite differently in different states. In several states, reforms drastically changed benefit levels. While the benefits levels in Tyrol and Vienna did not vary by type of protection neither over time during our period of study, Burgenland, Lower and Upper Austria experienced various changes from 2016 onwards. Appendix B.2 describes these reforms in detail (Huber and Dellinger, 2022).

We use this data to identify the level of welfare benefits a refugee could receive in the state and at the time of protection. We term this variable $IPBL$ - Initial Potential Benefit Level.

Figure 1: Welfare benefit levels for refugees (singles) by federal state



Notes: The figure shows the amount of monthly benefits in euros (excluding housing benefits) for singles by federal state and type of protection.

3 Data and Descriptive Statistics

3.1 Data sources and sample

We employ administrative data from the Austrian Social Security Database (ASSD), encompassing all social insurance episodes. This dataset provides detailed insights into basic demographics, employment sectors, labor income, and periods of employment, unemployment, and additional insurance episodes. The ASSD is further augmented with variables from the Federal Ministry of Labor and Economy (BMAW), encompassing protection type, asylum date, participation in educational programs, language proficiency, marital status, residency ZIP codes, basic income support, education level, previous and desired professions. This supplementary data covers all individuals granted protection status and registered with the Austrian Public Employment Service (PES). Although registration at the PES is voluntary, access to the social benefits linked to registration encourages it. In Appendix B.1, we test whether the number of refugees in our data, as a share of all individuals from those countries of origin in a district, correlates with our main explanatory variables, which is not the case.

Asylum-seekers are granted special health insurance upon arrival, designated as "O4" or "OE" in the ASSD, signaling coverage under basic subsistence support. This unique classification enables the precise identification of asylum-seekers, distinguishing them from recipients of other insurance types. It also allows us to see whether subsidiary-protected still receive this form of welfare benefits after being granted protection.

Our analysis encompasses all refugees granted protection under the Geneva Convention or subsidiary protection between January 2011 and August 2018.[9] We focus on individuals aged 18 to 60 at the time of immigration, excluding those who were granted protection status on the day of arrival, indicative of family reunification. We further exclude refugees for whom calculating treatment variables was impractical,[10] and individuals receiving protection more than three years after arrival.[11]

Our final sample consists of 41,212 refugees, among whom 39,694 maintained active insurance coverage for a minimum of five years post-protection. In Section A.2 of the Appendix, we examine the impact of our treatment variables on the probability of continuous insurance coverage over this five-year span. Finding no significant influence, we consequently limit our further analysis exclusively to those individuals who can be observed until the end of the five-year

[9] The selection of 2011 as the starting point is due to improved data quality from this year onwards. The cutoff in August 2018 allows for a five-year observation period following the granting of protection status.

[10] In a few districts, the $IVUR$ could not be computed for certain observations during the early years of our observation period due to official zeroes in the unemployment count.

[11] We conduct robustness exercises with different sample restrictions in Section 5.7.

period.

Additionally, we enhance our dataset with detailed municipality characteristics from Statistics Austria and utilize the ASSD to ascertain the number of vacancies and unemployed individuals at the district level.

3.2 Treatment variables

Initial vacancy-to-unemployment ratio *(IVUR).* We characterize labor market tightness at the time of protection status receipt through the initial vacancy-to-unemployment ratio ($IVUR$), utilizing aggregated monthly data on registered unemployment and vacancies at the municipality level from the ASSD. The $IVUR$ is defined as follows:

$$IVUR_{d_0,t_0} = \frac{\sum_{t=0}^{2} \text{open positions}_{d_0,t}}{\sum_{t=0}^{2} \text{unemployed individuals}_{d_0,t}} \tag{1}$$

This ratio is calculated by dividing the sum of open positions by the sum of unemployed individuals within a regional entity during the first three months following protection status receipt. t_0 refers to the month of receiving protection. d_0 refers to the district of residence when receiving protection. We choose political districts as they roughly align with labor markets.

Initial Potential Benefit Level *(IPBL).* Using the information on benefit levels introduced in Section 2, we define the Initial Potential Benefit Level ($IPBL$) as follows:

$$IPBL_{f,p,s_0,t_0} = \frac{PB_{f,p,s_0,t_0}}{1000} \tag{2}$$

The $IPBL$ quantifies the benefits potentially available to a refugee without further income or wealth, contingent upon their family status f,[12] type of protection p, state of residence at the time of protection s_0, and the date of protection t_0. We present $IPBL$ in units of 1,000 euro to facilitate a clearer graphical presentation of our findings. Consequently, $IPBL$ varies across federal states, protection statuses, family statuses, and over time, reflecting a sequence of policy reforms. A caveat is that our measure of benefit eligibility is imperfect, not covering other forms of benefits and only approximating the benefits for families. However, variation induced by the reforms should be captured very well.

Importantly, both $IVUR$ and $IPBL$ are assigned to each individual upon the granting of protection and remain unchanged thereafter. These indicators reflect the labor market tight-

[12] We determine family benefit eligibility if a person's child is insured in Austria or if there is a partnership status with another asylum-seeker and at least one dependent child coinsured in Austria at the time of protection receipt. This is different from our family arrival variable used to define the arrival groups in our identification strategy, where we consider asylum-seekers who arrive in Austria on the same date.

ness and the welfare benefits system that an asylum-seeker is subject to at the moment of initial authorization to enter the labor market and to move within Austria. Later changes in these variables due to relocation, amendments to benefit rules, or economic conditions are not considered as they are no longer assigned exogenously.

3.3 Outcomes

We examine three categories of outcomes at the individual level: labor market integration, mobility, and social support. We express each metric on a monthly basis, with time standardized relative to the month of protection receipt. Labor market performance encompasses a) an indicator for being employed[13], b) being in marginal employment[14], c) monthly real labor earnings, and logged real monthly wage income[15]. For mobility, we track whether a refugee remains in the same state as when protection was granted and whether they reside in Vienna, specifically for those initially located in a different federal state. The mobility measure is based on the contact address available to the Social Security Administration. Social support metrics include a) receipt of any Public Employment Services (PES) support within a month, such as language courses, job training, or counseling, and b) receipt of any welfare benefits, and separated by basic needs support and basic subsistence support sources. Additionally, an active insurance spell serves as a proxy for a refugee's presence in Austria.[16]

3.4 Descriptives

Table 1 presents the summary statistics for our analysis sample, which consists of 39,694 individuals. Among these, 31,597 are convention refugees, and 8,097 have subsidiary protection status. Two-thirds of refugees (64.7%) are male, with an average age of 30.49 years at the time of immigration. More than half of the sample, 54.6%, originates from Syria, followed by significant populations from Afghanistan (18.5%), Iraq (7.8%), and Iran (7.3%). A substantial portion, 59.6%, exhibit limited German language proficiency (A1/A2 level), and 69.2% possess only primary education or lack it entirely. Noteworthy disparities exist between convention refugees and subsidiary-protected individuals regarding their countries of origin, the duration

[13]Employment is defined as any employment spell subject to social insurance contributions.

[14]Marginal employments are employment spells with earnings below the marginal earnings threshold (406 euro in 2015).

[15]The earnings used to calculate real labor earnings and logged real monthly wage income are reported as pre-insurance, pre-tax gross income for each employer-employee relationship. For employment spells before 2019, earnings were reported annually, while after 2019, they have been reported on a monthly basis. We calculated average daily earnings for each employment contract and summed them up in cases of multiple simultaneous spells.

[16]Our focus on individuals who received protection makes it rather unlikely that individuals switch to an informal status and remain in Austria, which would be an alternative explanation for an end to insurance in Austria.

of asylum processes (12.1 months for convention refugees versus 15.9 months for those with subsidiary protection), and their eligibility for family benefits[17] (35.9% versus 24%). $IVUR$ is similar across groups, but on average, the $IPBL$ for subsidiary-protected individuals is 308 euro lower due to a lower likelihood of being eligible for family benefits and generally less generous benefits for this group (see Section 2).

The final panel of the table details outcomes measured in the 12^{th} month post-protection. Around 95% have an active insurance spell. The employment rate is 11.3% with mean monthly earnings of 203 euro. Subsidiary-protected refugees do slightly better than convention refugees on both metrics. 71% of convention and 61% of subsidiary-protected refugees still live in the same state as initially assigned to. Given the low labor market integration, dependence on welfare benefits is high; 75% receive some form of benefits, and approximately 38% receive support from the PES.

Figure 2 shows how the employment rate (left) and the share of refugees who remain in the initial state (right) evolve from the moment of receiving protection. The employment rate starts from near zero at the time of protection. For men, it rises steadily and reaches about 60% after five years. For women, the employment rate is less than 20% after five years. The other notable aspect is high mobility rates immediately after receiving protection. Within six months, a quarter of refugees has moved to another state. Mobility is higher for men than for women. Figure A.3 in the Appendix shows the evolution of other outcome variables by gender over time.

Mobility patterns after receiving protection vary substantially between federal states (see Figure 3). In Vienna, 96% of refugees remain, while only 26% do so in Burgenland, the other end of the distribution. The overwhelming majority of individuals who move between federal states move to Vienna. Twelve months after protection, 90 or more percent of all refugees are either in their initial states or in Vienna. The other states play only a marginal role as destinations for internal mobility.

Vienna is not only an attractive destination among refugees but among other migrants. While 22% of the Austrian population live in Vienna, this share is about 40% among foreigners. On the other end, Burgenland, with 3.3% of the population, only hosts 2% of foreigners in Austria (Statistik Austria, 2024).

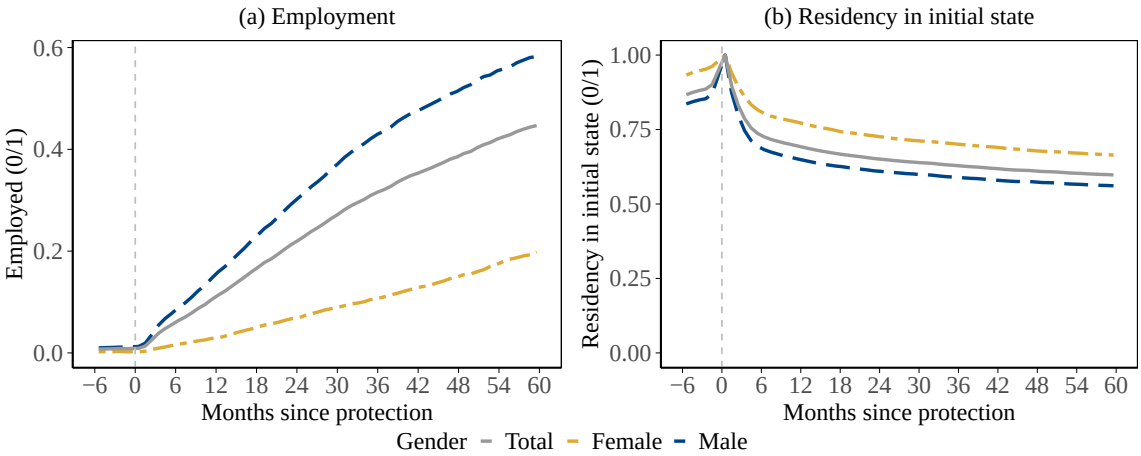
[17]We define eligibility for family benefits when receiving protection for refugees as applicable to those who are co-insured or provide co-insurance— through a partnership or a parent-child relationship—to another individual who has been registered as a refugee in Austria on or before the date of protection.

Table 1: Summary statistics

	Convention refugee	Subsidiary-protected	Total
	Time-invariant characteristics		
Gender (female=0)	0.63 (0.48)	0.70 (0.46)	0.65 (0.48)
Age at immigration	30.75 (9.17)	29.49 (9.46)	30.49 (9.25)
Origin country			
Afghanistan	4440 (14.1%)	2903 (35.9%)	7343 (18.5%)
Iran	2779 (8.8%)	124 (1.5%)	2903 (7.3%)
Iraq	1806 (5.7%)	1287 (15.9%)	3093 (7.8%)
Other	1623 (5.1%)	639 (7.9%)	2262 (5.7%)
Russia	433 (1.4%)	158 (2.0%)	591 (1.5%)
Somalia	631 (2.0%)	1190 (14.7%)	1821 (4.6%)
Syria	19885 (62.9%)	1796 (22.2%)	21681 (54.6%)
Duration asylum process	12.08 (9.02)	15.90 (9.50)	12.86 (9.25)
German skill level			
A	18786 (59.5%)	4872 (60.2%)	23658 (59.6%)
B/C	6019 (19.0%)	1258 (15.5%)	7277 (18.3%)
unknown	6792 (21.5%)	1967 (24.3%)	8759 (22.1%)
Education level			
primary	21344 (67.6%)	6122 (75.6%)	27466 (69.2%)
secondary	4469 (14.1%)	640 (7.9%)	5109 (12.9%)
tertiary	1913 (6.1%)	219 (2.7%)	2132 (5.4%)
unknown	3871 (12.3%)	1116 (13.8%)	4987 (12.6%)
Family benefit eligibility	0.36 (0.48)	0.24 (0.43)	0.34 (0.47)
	Initial local conditions		
IVUR	0.19 (0.15)	0.20 (0.16)	0.19 (0.15)
IPBL	826.87 (292.41)	518.66 (288.19)	763.99 (316.91)
	Outcomes in month twelve		
No Austrian insurance	0.06 (0.23)	0.03 (0.16)	0.05 (0.22)
In employment	0.10 (0.30)	0.17 (0.37)	0.11 (0.32)
Monthly real earnings	180.27 (551.53)	292.51 (663.54)	203.16 (577.92)
In marginal employment	0.03 (0.18)	0.03 (0.18)	0.03 (0.18)
Residency in initial state	0.71 (0.45)	0.61 (0.49)	0.69 (0.46)
Residency in Vienna	0.51 (0.50)	0.58 (0.49)	0.52 (0.50)
PES services	0.38 (0.48)	0.39 (0.49)	0.38 (0.49)
Receiving welfare benefits	0.76 (0.43)	0.74 (0.44)	0.75 (0.43)
Observations	N=31597	N=8097	N=39694

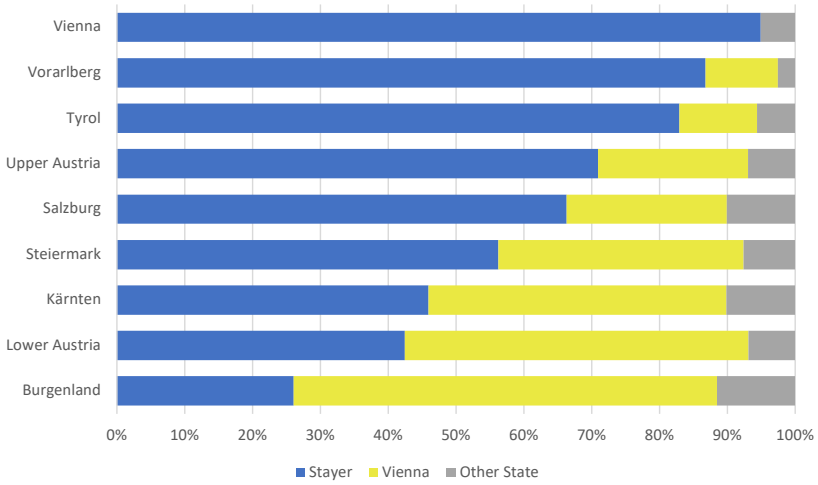
Notes: The table reports means and standard deviations (in brackets) for continuous and binary variables. The number of observations and the percentage within groups are reported for categorical variables. Time-varying (outcome) variables are reported for the 12^th month after protection was received. The sample is restricted to refugees who received protection between January 2011 and August 2018, who were between 18 and 60 years old at the time of immigration and whose asylum process lasted longer than a day but less than three years, and where full data is available for 60 months after the date of protection. Family benefit eligibility is an indicator equal to one if children who are co-insured with this person or their partner are registered in Austria at the time of receiving protection. Duration of asylum process is denoted in months and earnings are denoted in real 2015 euro.

Figure 2: Share of refugees in employment and residency in initial state by time since receiving protection



Notes: The figure shows the share of employed refugees and of refugees who remained in their initial state by months since protection. and gender. The x-axis shows the months since receiving protection. The y-axis displays the shares of refugees in (a) employment or (b) residing in the state of protection (initial state).

Figure 3: Residence of refugees twelve months after receiving protection by initial state



Notes: The figure shows the state of residence of refugees twelve months after receiving protection. Stayers remain in the initial state (blue). Yellow bars indicate the shares that move from another state to Vienna. Gray bars indicate the shares that move to a state other than Vienna.

4 Empirical Approach

In an ideal experiment aimed at understanding the impact of two treatments and their interaction, one would randomize the receipt of those two treatments. However, such randomization is conceptionally not feasible in our context. While it is conceivable to assign benefit generosity, labor demand, driven by the economy's evolution, cannot be manipulated in the same manner. Therefore, we must conceptualize treatment assignments differently. Rather than assigning treatments to individuals, we allocate individuals to treatments based on their location, timing, protection status and family status. Each combination of place, time, and status cells comes with values for the treatment variables, $IVUR$ and $IPBL$.

Approaching identification from this angle requires separately thinking about two levels of identifying assumptions. First, are individuals exogenously assigned to cells? Second, are there other characteristics of these cells that are correlated with the value of the treatment variables also affecting the outcomes and thus confounding the analysis?

Subsequently, we describe our empirical strategy that seeks to address both levels of the identification problem. We start with a description of the econometric specification and subsequently explain how this specification is linked to our identification problem.

4.1 Econometric specification

The essence of our empirical strategy is to leverage differences in conditions faced by asylum-seekers, which vary by their location and timing of receiving protection. $IPBL$ additionally varies by the type of protection received and family status. This variability allows us to identify the impact of $IVUR$ and $IPBL$. The primary specification takes the following form:

$$Y_{i,t} = \alpha_t + \beta_{1,t} IVUR_{d_0,t_0} + \beta_{2,t} IPBL_{f,p,s_0,t_0} + \gamma_{t_0} + \delta_g + \eta_{d_0} + X_i \Delta_t + \epsilon_{i,t}, \tag{3}$$

where $Y_{i,t}$ denotes the outcomes for individual i, observed t months after being granted protection status. The term $\beta_{1,t}$ captures the effect of $IVUR$ t months post-protection, and $\beta_{2,t}$ captures the effect of $IPBL$.

The fixed effects for the month-year of receiving protection are denoted by γ_{t_0}. Fixed effects for arrival groups are denoted by δ_g. Arrival groups are defined by the interaction of gender, whether refugees arrived alone or with family members[18], the initial state of registration, and the quarter and year of arrival in Austria. Fixed effects for the district of residence at the time granting protection are denoted as η_{d_0}.

[18] We identify family arrivals if people with a coinsurance relationship are registered in Austria for the first time on the same day, i.e., at the date of arrival.

The vector X_i encompasses time-invariant individual controls, including age at immigration and its square, type of protection status, country of origin, and eligibility for family benefits.

4.2 Identification strategy

4.2.1 Assignment to location-time-status-cells

First, we consider the allocation of refugees to the districts where they reside when receiving protection. This is the district where they get access to the Austrian labor market and that determines under which state's welfare regime they initially fall. As explained in Section 2, municipalities might indicate preferences regarding the characteristics of asylum-seekers they can host. Thus, we expect systematic differences in the characteristics of refugees between municipalities. We address this issue by implementing arrival-group fixed effects δ_g. Within groups of people of the same gender who arrived in Austria in the same quarter, were initially registered in the same state, and arrived alone or as a family, the assignment to municipalities depends on the next available housing unit at that point in time. Thus, within arrival groups, it is a haphazard process to determine which asylum seeker goes to which municipality. Further, asylum-seekers are effectively banned from relocating to another state as they would lose benefits and are mostly unable to relocate within a state due to financial constraints.[19] Given these constraints, conditional on the arrival group, denoted as δ_g in our specifications, asylum-seekers find themselves quasi-randomly assigned to the district where they live when their protection is granted.

The duration until the asylum claim is processed primarily depends on the capacity of the bureaucracy and can barely be influenced by the asylum-seeker. Thus, the specific month-year in which protection is granted is also exogenous, conditional on the arrival group.

$IPBL$ also depends on protection type and family status. Both factors might directly influence our outcomes of interest. Thus, we condition on eligibility for family benefits and protection type to only compare individuals within the respective group.

In sum, asylum-seekers cannot select a district based on perceived labor market prospects or welfare benefits, nor determine the timing of receiving protection. Municipalities can only express preferences over broad characteristics, which is why we seek to make comparisons within arrival groups.

While we cannot directly ascertain if asylum-seekers could self-select into specific districts

[19] The basic subsistence support usually provides housing in organized accommodations. In the case of independent relocation to private housing within the state, asylum-seekers only receive a small monthly compensation, which is usually insufficient to pay for rent.

Table 2: Correlation of initial vacancy-to-unemployment ratio and initial potential benefit level with migrant characteristics

	(1) IVUR	(2) IVUR	(3) IPBL	(4) IPBL
Asylum process duration	0.045	0.353	0.286	0.447
	(0.064)	(0.305)	(0.197)	(0.776)
Age at immigration	−0.034	−0.013	0.178***	0.118*
	(0.031)	(0.026)	(0.068)	(0.066)
	Education (reference category: Primary)			
Secondary education	−3.803***	−1.849*	−4.909*	−4.257*
	(1.443)	(1.084)	(2.626)	(2.431)
Tertiary education	−2.981**	−1.512	−7.342***	−7.276***
	(1.424)	(1.040)	(2.689)	(2.279)
Unknown education	−0.554	−0.155	3.192	2.315
	(1.076)	(0.970)	(2.425)	(2.271)
	German skills (reference category: A)			
B/C german skills	−0.033	−0.525	−3.943**	−4.049**
	(0.795)	(0.711)	(1.930)	(1.778)
Unknown german skills	−0.612	0.127	−0.888	0.228
	(0.710)	(0.638)	(2.004)	(1.743)
	Known Confounders IPBL			
Convention refugee	−1.601*	−0.560	242.678***	239.790***
	(0.942)	(0.901)	(27.504)	(27.982)
Family benefit eligibility	2.199**	−1.146	560.072***	564.161***
	(0.968)	(0.842)	(5.759)	(5.247)
District FE	X	X	X	X
Month and year FE	X	X	X	X
Country of origin FE	X	X	X	X
Arrival group FE		X		X
N	39 694	39 694	39 694	39 694
Wald-Test (p-value) IVUR	0.8	0.997	-	-
Wald-Test (p-value) IPBL	-	-	0.594	0.802

Notes: Coefficients from OLS regressions of the $IVUR$ and $IPBL$ at the month of protection on migrant characteristics as well as a full set of district-at-protection, year-month, and country-of-origin fixed effects. $IVUR$ and $IPBL$ are multiplied by 1000 for better depiction. Columns 2 and 4 also include arrival-group fixed effects. The Wald-Test statistics test the full models against a restricted model with i) only fixed effects for the $IVUR$ and ii) fixed effects and dummy variables indicating the type of protection and assumed family status at protection date. Standard errors are clustered at the state-year-of-protection level. */**/*** denote statistical significance at the 10/5/1 percent level.

or influence the duration of their asylum process, we can investigate if $IVUR$ and $IPBL$ correlate with individual characteristics. We achieve this by regressing i) the district-level $IVUR$ and ii) the state-level $IPBL$ on district, month-year of protection, country of origin, and arrival group fixed effects. Additionally, we control for the type of protection and an indicator for family benefit eligibility, which are established confounders for the $IPBL$ since the $IPBL$ varies with protection type and family size.

Columns (1) and (3) of Table 2 present the results without arrival group fixed effects, columns (2) and (4) with. All coefficients are close to zero and negligible in magnitude. For example, with arrival group fixed effects, individuals with secondary education face an $IVUR$ of 0.001849 smaller than individuals with primary education. This amounts to roughly one percent of a standard deviation of $IVUR$. Similarly, the coefficient for $IPBL$ suggests that individuals with secondary education face an $IPBL$ that is about four euros lower than individuals with primary education.

The overarching Wald-Tests do not reject the hypotheses that personal characteristics are uncorrelated to $IVUR$ and $IPBL$, with p-values in all specifications being at least 0.59.[20] Overall, these results support our argument that the placement of asylum-seekers to districts is exogenous.

4.2.2 Exogeneity of *IVUR* and *IPBL*

Second, we consider a possible correlation between $IVUR$ and $IPBL$ and other local characteristics affecting refugees' labor market success. For example, regions with high $IVUR$ and $IPBL$ could also have a more welcoming civil society that helps refugees integrate better. To address this concern, we include district fixed effects η_{d_0} that control for all time-constant regional characteristics with constant effects. Controlling for month-year of protection, fixed effects γ_{t_0} holds constant all factors that influence all regions in the same way, such as national policy changes.

Given these fixed effects, we deem it unlikely that $IVUR$ is confounded by other local factors influencing the outcome. The argument is less clear for $IPBL$. The welfare reforms, which drive most of the variation in benefit levels, might result from a broader change in attitudes towards refugees, which might also affect the outcomes. While we cannot fully rule out this possibility, we argue that we can determine the direction of a potential bias. Reductions in benefits likely reflect a more negative attitude, which might in itself trigger relocation to another state. Thus, the estimated effect for benefits would capture this as well. Our estimate

[20] For the $IVUR$, we contrast the model with all presented personal characteristics against the model with only fixed effects. For the $IPBL$, we compare the full model to one that includes only the fixed effects and the known confounders.

for the effect of benefits on relocation thus reflects an upper bound (in absolute terms).

5 Results

An increase of one unit in $IVUR$ signifies the addition of as many new job openings in a district as there were unemployed individuals, while maintaining the unemployment count steady. Meanwhile, a one-unit increase in the $IPBL$ represents an increase in potential benefit levels by 1,000 euros. To obtain easy-to-interpret effect sizes, we use a shift roughly amounting to the standard deviation (s.d.) and the interquartile range of the $IVUR$ and $IPBL$ as a reference. For the $IVUR$, this shift denotes an increment of 0.2 ($s.d. = 0.153, IQR = 0.211$), and for the $IPBL$, an increase of 0.3 (300 euro, $s.d. = 316.9, IQR = 456$).[21] Subsequently, we term this a *standard shift* or a *standard increase*. Multiplying the shift with $\beta_{1,t}$ for the $IVUR$ and $\beta_{2,t}$ for the $IPBL$ gives us the change in the outcome for each respective increase.

5.1 Effects on labor market outcomes

Figure 4 presents the primary results for selected labor market outcomes. Panels (a) through (d) illustrate how an increase of one unit in $IVUR$ or $IPBL$ impacts (a) the likelihood of being in employment, (b) the unconditional monthly real earnings (in 2015 euro), (c) the log of real monthly wage income (conditional upon employment), and (d) the likelihood of being in marginal employment.

A standard shift in the $IVUR$ increases the employment probability in the 12^{th} month after receiving protection by 4 pp. The effect occurs almost immediately after receiving protection and starts to weaken after 18 months, turning zero in month 30. This finding is qualitatively in line with other results in the literature that study the effect of economic conditions at labor market entry on employment outcomes.[22] Relative to the mean employment rate of 11.3% in month twelve, a standard increase for $IVUR$ increases the employment probability by 35%.

A standard increase in the $IPBL$ decreases the employment probability by 1.51 pp. in month twelve (13.3% of the mean). This effect also disappears after 30 months.

Panel (b) shows the effects on monthly earnings. The patterns of the effects closely follow the employment effect. A standard shift in the $IVUR$ increases earnings by 81 euro (39% relative to the mean in month twelve), and a standard shift in $IPBL$, decreases earnings by 33 euro (-15.8% relative to the mean in month twelve), in monthly real earnings. Another way to

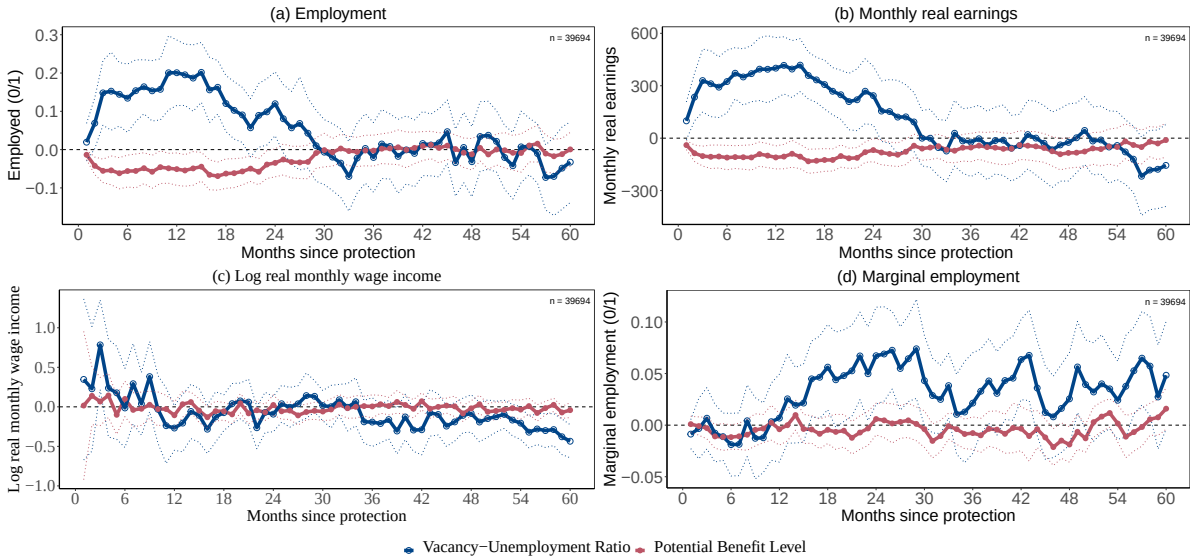
[21] We use round numbers in the ballpark of the standard deviation and the IQR for ease of interpretation.

[22] For example, Barsbai et al. (2024) find that family migrants who face a higher unemployment rate at immigration are initially less likely to be employed, with the effect disappearing after four years.

interpret the effect of $IPBL$ is that every 100 euros increase in potential benefits results in a decrease of 11 euros in monthly real earnings.

The similarity of the patterns in Panels (a) and (b) strongly suggests that changes in employment drive the effects on earnings. To understand whether the shocks also affect wages, we use log real monthly wage income (conditional on having any income) as an outcome in Panel (c).[23] We do not find any statistically significant effects on wages, contrasting other findings in the literature of rather persistent wage effects (Barsbai et al., 2024). Panel (d) suggests a tiny positive effect of a higher $IVUR$ on the likelihood of marginal employment starting after twelve months, with the $IPBL$ showing no discernible effect.

Figure 4: Effect of the $IVUR$ and $IPBL$ on selected labor market outcomes



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on selected outcomes. The panels show the effects on (a) having any type of part- or full-time employment (binary); panel (b) the unconditional monthly real earnings (in 2015 euro); panel (c) the log real monthly wage income (conditional on being employed); and panel (d) the probability of having a mini-job (below 406 euro in 2015). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

5.2 Effects on internal mobility

Better labor market conditions and higher benefits should reduce the likelihood of relocating, which is very common among refugees after receiving protection (see Figure 2). We show results for mobility in Figure 5.

[23]This analysis on wage income is conditional on being employed and rests on the assumption that sorting into employment is unrelated to $IVUR$ and $IPBL$.

In Panel (a), we observe that an increase in the $IVUR$ has a statistically significant positive impact on the likelihood of refugees staying in the state. Specifically, a standard shift in the $IVUR$ leads to a 3.9 pp. increase in this probability in month twelve. Similarly, a standard shift in the $IPBL$ results in a 2.8 pp. increase in the same likelihood in month twelve. The effects become somewhat weaker over time but persist for 60 months, suggesting that enhanced welfare benefits and a strong labor market both positively influence the likelihood of refugees staying in their original state.

These findings are further supported by the observations in panel (b). Here, we note a consistent negative effect of the $IPBL$ on the likelihood of relocating to Vienna for those not initially assigned to Vienna. The $IVUR$, also has a negative but not persistent and only marginally significant effect.

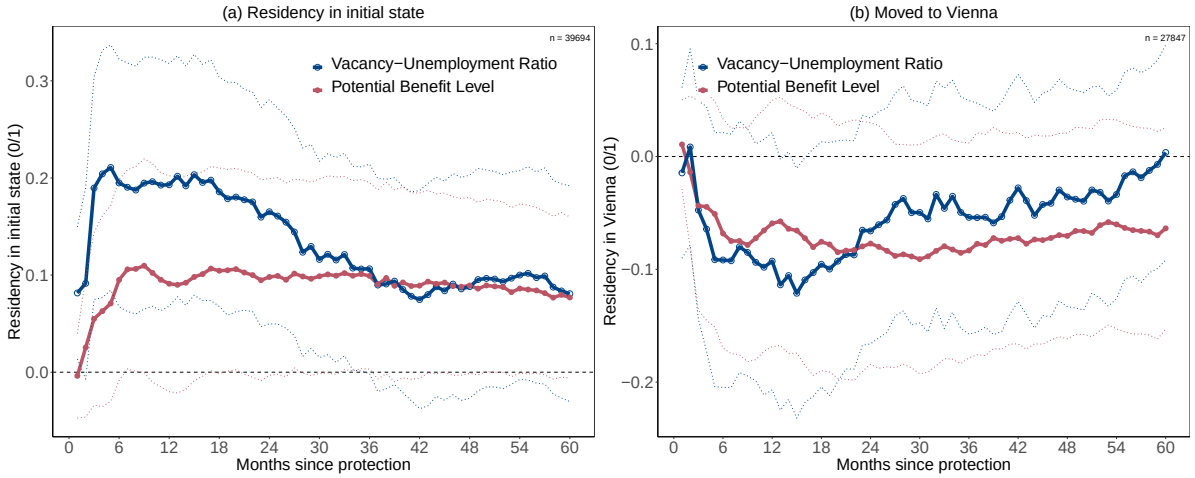
The similarity of approaches allows for a direct comparison with the results of Ferwerda et al. (2023) who study the effect of current benefit levels on the probability of immigrants moving within Switzerland. They find that increasing benefits from less than 750 CHF to 751-1500 CHF increases the likelihood of staying by about 1.5 pp. while an increase to 1500-3000 CHF increases it by about 2 pp. Our effects are significantly larger, as a 2 pp. change in the probability is triggered by a roughly 200 euro change in benefit levels. A likely explanation is that the effects in the Austrian context are larger because the treatment is applied when refugees receive protection, when they are not yet strongly tied to a specific location and are potentially more mobile.

In Figure 6, we show how the effects on employment and location choice interplay. A higher $IVUR$ positively affects the joint probability of being employed and in the initial state (panel (a)) and negatively affects the joint probability of being not employed and in another state (panel (d)). In other words, migrants stay because they are in employment instead of move and need to search for a job in another state.

In contrast, the $IPBL$ has a comparatively strong effect on the joint probability of being not employed and in the initial state (panel (b)). However, this is largely due to a higher likelihood of remaining in the state and not due to changing employment prospects. This becomes apparent from the negative effect on being not employed and in another state (panel (d)).

This suggests that strong labor markets increase the probability of people remaining in the initial state due to the availability of jobs. In contrast, weak labor markets might incentivize relocation to another state without prospects of work in the destination state. Additionally, these findings indicate that benefit levels are relevant for the location choice but less so for

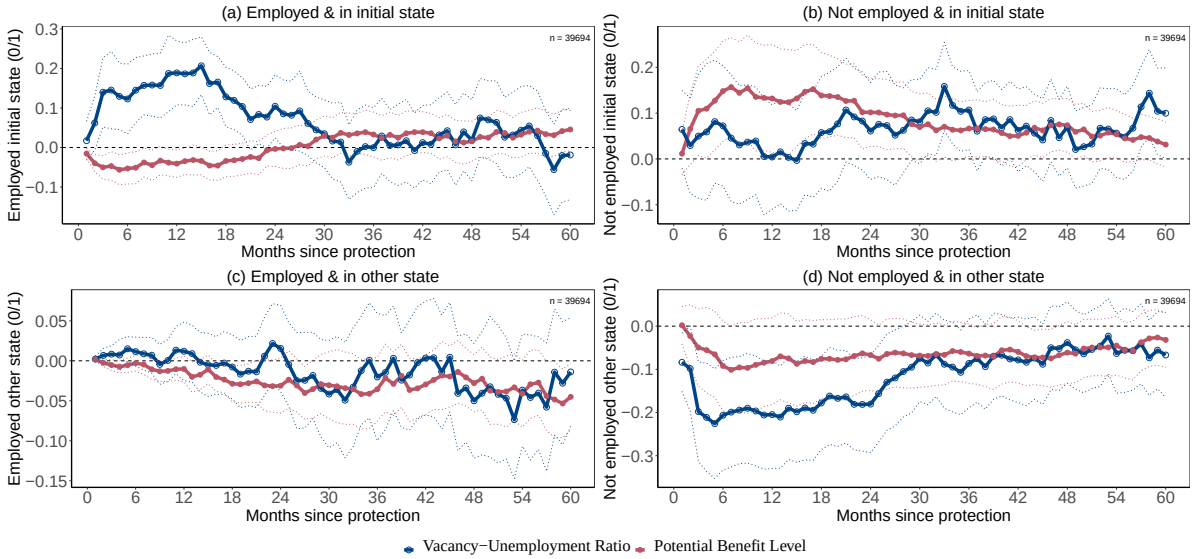
Figure 5: Effect of the $IVUR$ and $IPBL$ on mobility outcomes



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on selected outcomes. Panel (a) shows the effects on the probability of living in the state of protection; panel (b) shows the effect on moving to Vienna (conditional on residing outside Vienna at the time of protection). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

employment trajectories.

Figure 6: Effect of the $IVUR$ and $IPBL$ on employment and location choice



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on selected outcomes. Panel (a) shows the effects on the joint probability of being employed and living in the initial state; panel (b) shows the effect on the joint probability of being not employed and living in the initial state. Panel (c) shows the effects on the joint probability of being employed and living in another state; panel (d) shows the effect on the joint probability of being not employed and living in another state. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

5.3 Effects on receiving social support

The third group of outcomes is measures of receiving social support. Figure 7 shows the effects on the likelihood of (a) utilizing services from the public employment service and (b) receiving welfare benefits.

We do not observe any effect of the $IVUR$ or $IPBL$ on utilizing PES services (Panel (a)). If anything, higher $IPBL$ has a small negative effect in the first nine months.

Panel (b) shows a significant negative impact of the $IVUR$ on the probability of receiving welfare benefits in the first 30 months. Interestingly, the magnitude of this effect is consistent with the positive effect of the $IVUR$ on employment (Figure 4, Panel (a)). Furthermore, the impact on receiving welfare benefits diminishes and becomes statistically insignificant after 30 months, mirroring the trajectory of the employment effect. This suggests that refugees who secure employment due to favorable local labor market conditions are less likely to rely on welfare benefits.

Similarly, we observe that a higher $IPBL$ has a small but significant effect on the like-

lihood of receiving welfare benefits, particularly in the years two and three after receiving protection. The effect is largest about 24 months after receiving protection, when a standard shift in $IPBL$ increases the probability of receiving welfare benefits by about 2.5 pp. Again, the pattern mirrors the effect of $IPBL$ on employment.

Figure 7: Effect of the $IVUR$ and $IPBL$ on selected social support outcomes

Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on selected outcomes. The panels show the effects on (a) the probability to make use of PES services and (b) the probability of receiving welfare benefits. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

5.4 Interplay of local labor demand and benefit levels

Our main specification, as presented in Equation 3, estimates how $IVUR$ and $IPBL$ independently affect refugees' economic and social integration after receiving protection. To further explore the relationships between these variables, we introduce an interaction term between $IVUR$ and $IPBL$ in Equation 4:

$$\begin{aligned} Y_{i,t} = &\alpha_t + \beta_{1,t} IVUR_{d_0,t_0} + \beta_{2,t} IPBL_{f,p,s_0,t_0} + \beta_{3,t} IVUR_{d_0,t_0} \times IPBL_{f,p,s_0,t_0} \\ &+ \gamma_{t_0} + \delta_g + \eta_{d_0} + X_i \Delta_t + \epsilon_{i,t}, \end{aligned} \tag{4}$$

This modification builds upon our main specification from Section 4 and allows us to explore how the interplay between $IVUR$ and $IPBL$ affects our outcomes of interest. Subsequently, we are able to calculate and interpret the effects of changes in the $IPBL$ for different levels of labor demand.

Table 3 reports the results for selected outcomes twelve months after receiving protection. For ease of interpretation, we demeaned $IVUR$ and $IPBL$. The coefficients for the main effects remain comparable to our previous results in direction, magnitude, and statistical significance. The interaction term has a significant, opposing effect on the probability of being in employment and receiving welfare benefits (columns (1) and (4), respectively). For the probability of remaining in the initial state in column (2), we find no statistically significant effect of the interaction, but we find a positive significant effect on the probability of receiving assistance by the PES in column (3).

The marginal effects are calculated for the $IPBL$. Therefore, we fix the $IVUR$ at zero on the first row, the mean in the second row and at 0.2 above the mean in the third row.

Column (1) shows that the effect of changes in benefit levels on the probability of being employed at different levels of labor demand. Changes in benefit levels have practically no effect on the employment probability when labor demand is zero. However, benefit levels affect employment probability strongly when labor demand is high. We see the inverse effects for the receipt of welfare benefits (column (4)). These results are in line with the findings of Dustmann et al. (2024), who find the cuts in welfare benefits in Denmark only affect the employment probability in strong labor markets.

Column (3) suggests that when labor demand is high, increasing benefits increases the likelihood of receiving assistance from the PES. This is potentially due to the combination of the incentives for public agencies to fill the labor demand, but also to reduce the fiscal cost due to high benefit levels.

Table 3: Effects of $IVUR$ and $IPBL$ with interactions of treatment variables and marginal effects of $IPBL$ for different levels of $IVUR$, twelve months after protection

	(1) In employment	(2) In initial state	(3) PES support	(4) Welfare benefits
Coefficients				
IVUR	0.188***	0.189**	-0.021	-0.218***
	(0.044)	(0.062)	(0.056)	(0.048)
IPBL	-0.050**	0.091**	-0.005	0.048*
	(0.018)	(0.030)	(0.025)	(0.024)
IVUR:IPBL	-0.294***	-0.091	0.230***	0.280***
	(0.043)	(0.112)	(0.055)	(0.071)
Marginal Effects				
IPBL (IVUR=0)	0.006	0.108	-0.049	-0.006
IPBL (IVUR=0.192)	-0.050	0.091	-0.005	0.048
IPBL (IVUR=0.392)	-0.109	0.073	0.041	0.104

Notes: The upper part of the table reports OLS estimates for $IVUR$, $IPBL$ and their interaction. The lower part reports marginal effects for $IPBL$, fixing $IVUR$ at zero, the mean (0.192) or 0.2 above the mean. The column title shows the outcome variable. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. */**/*** denote statistical significance at the 10/5/1 percent level.

5.5 Effect heterogeneity by gender

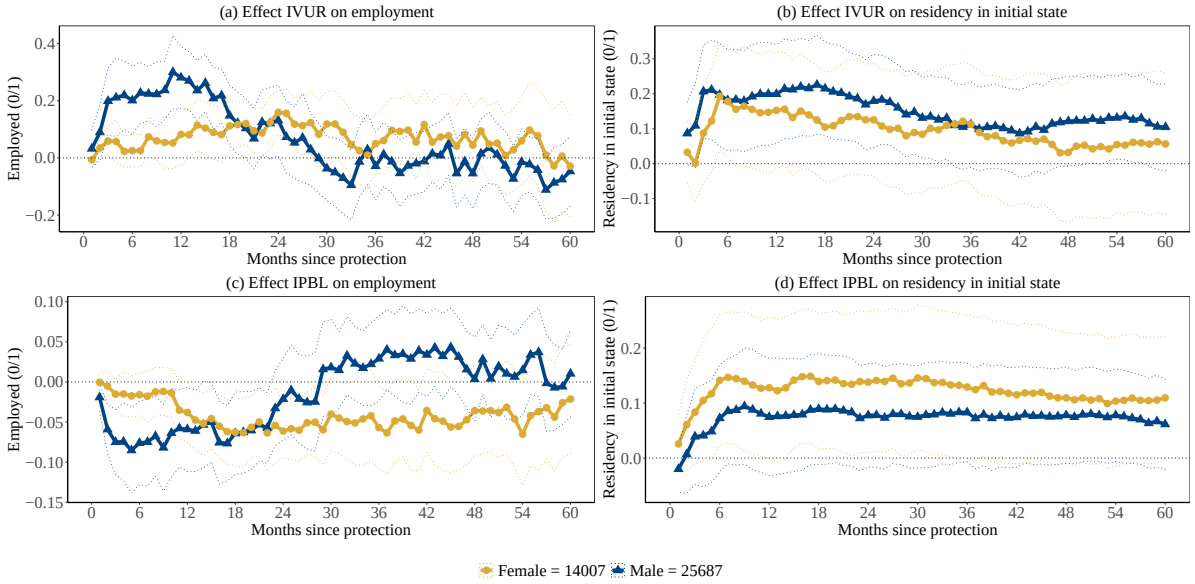
One of the notable observations is the significant disparity in labor market integration between genders, with women's employment rates standing at only 20% even five years post-protection, in stark contrast to men's, which is at 60% (see Figure 2).

In this section, we investigate whether men and women also differ in their reactions to $IVUR$ and $IPBL$. For this, we conduct the analysis separately for men and women with the results shown in Figure 8.

Panel (a) shows the effects of $IVUR$ on employment. $IVUR$ strongly affects the employment probability of men in the first 18 months after protection, but has hardly an effect on women. Still, for women, we do see some positive effects from around month twelve onwards. While this effect is small in absolute terms, it is not in relative terms, given the extremely low employment rate of female refugees. Panel (b) shows the effect of $IVUR$ on mobility. Point estimates are slightly larger for men, but overall, the pattern is similar. Panel (c) shows the effect of $IPBL$ on employment. While men initially reduce their employment more in response to higher benefits, the effect persists only for 30 months. For women, the negative effect of $IPBL$ on employment is small but relatively persistent. Finally, Panel (d) shows that the effect of $IPBL$ on the likelihood of staying in the state is somewhat stronger for women and persistent for both groups.

These findings align with the behavior predicted by traditional household models. When men primarily engage in market activities and actively seek employment, their sensitivity to

Figure 8: Effect heterogeneity by gender



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on selected outcomes. The panels show the effects on (a) the probability of making use of PES services and (b) the probability of receiving welfare benefits. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

labor demand is expected to be higher. For women, labor demand is less influential. Regarding mobility, labor demand indirectly affects the non-working partner's decisions, especially if the household relocates due to the male partner's unfavorable labor market conditions. Conversely, as men's attachment to the labor market strengthens over time, the significance of benefit levels wanes. However, benefits continue to play a crucial role for women, significantly influencing location choices within Austria.

5.6 Mechanisms

In this section we explore whether a particular type of occupations drive the $IVUR$ results. For this, we generate alternative measures of the $IVUR$. First, by desired occupations, which are usually registered by the caseworkers at the PES for each job-seeker. And second, by seasonal and non-seasonal jobs.

Labor demand by most desired occupations. A broad measure of labor demand reflects the overall situation of the local labor market. However, many jobs that firms are seeking to fill might not be accessible to refugees with short tenures in the host country due to a lack of necessary language skills or recognized qualifications. To investigate whether the occupations

in demand matter, we use the detailed nature of the vacancy data to create alternative versions of the $IVUR$.

First, we create a measure of demand for occupations with particularly low entry barriers. The PES records *desired occupations* for every person registering with the PES. Desired occupations are not necessarily the jobs a job seeker desires, but those that a caseworker considers realistic based on the job seeker's prior experience and skills. We see a strong clustering for refugees, with four occupations accounting for more than 50% of the desired occupations: construction, cleaning, cooking and kitchen assistance, and general manual labor. Thus, we consider labor demand in these four occupations.

Figure 9 shows the effect of the $IVURs$ in desired occupations on employment and mobility. The impact of labor demand in desired occupations on employment is approximately three times larger than that of the overall measure (left figure). However, this effect is short-lived, diminishing sharply after 18 months. In contrast, mobility is also strongly affected in the short term, and the effects, while somewhat declining, persist over the 60-month observation period (right figure).[24]

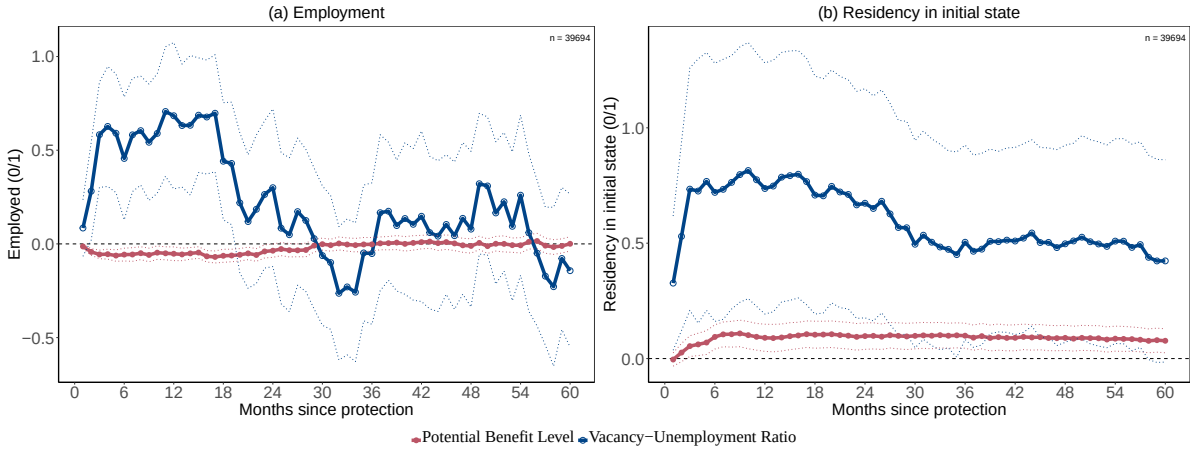
Labor demand by seasonal occupations. We create a measure for demand in jobs labeled as seasonal occupations, often found in the tourism industry. These jobs are of particular interest as they reflect truly short-term opportunities rather than long-term economic perspectives.

For both types of occupations, we create measures for the $IVUR$ by dividing the number of open positions in the respective categories by the number of job seekers. Note that we do not restrict job seekers to those looking in these specific occupations, as they often search in a broader range of fields.

Figure 10 shows the effects of labor demand in seasonal occupations, Figure 11 for the non-seasonal occupations. It is important to note that due to district-fixed effects, this demand does not reflect differences in the regional economic structure, such as tourist areas. Instead, it reflects pure short-term demand for labor due to likely idiosyncratic reasons. For example, certain weather conditions might increase or decrease labor demand in the tourist industry

[24]This analysis has two caveats. First, these jobs account for only a small fraction of all vacancies, and the regional variation in this $IVUR$ measure is significantly smaller. Thus, while the effect of labor demand in this occupation is large, the low variation implies that the overall effect of demand in these occupations on explaining mobility and employment differences between regions is small. Second, labor demand in these occupations might be correlated with labor demand in other occupations. In this case, the estimates would be upward biased. To address this concern, we run a model that includes labor demand in all other but the desired occupations. The estimated effect of demand in the other occupations is slightly smaller but similar to the main result. Desired occupations have a stronger but more short-lived effect on employment than other occupations. However, they account only for a small share of all occupations. The estimated coefficients for the $IVUR$ using the non-desired professions are as follows: the effect of $IVUR$ on employment is 0.23427, and on residing in the initial state is 0.2186.

Figure 9: Effect of $IVUR$ in desired occupations on employment and mobility

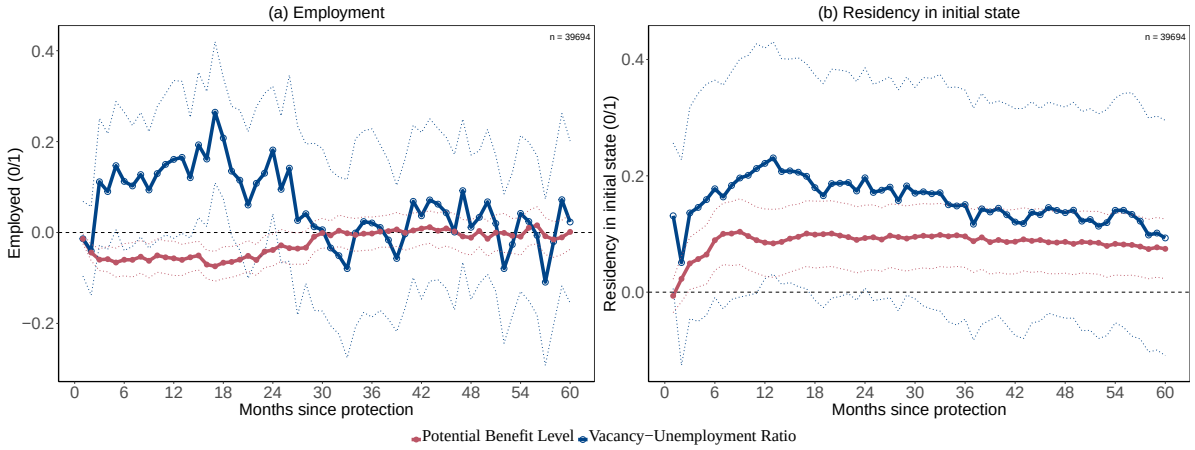


Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the occupation-specific vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level.

or agriculture at specific times (Baumgartner et al., 2023). The demand for these seasonal occupations should thus not influence forward-looking decisions based on expected labor market chances. Nevertheless, we find that seasonal employment increases the likelihood of employment and persistently increases the likelihood of staying, with the effects being only slightly smaller than for non-seasonal occupations.

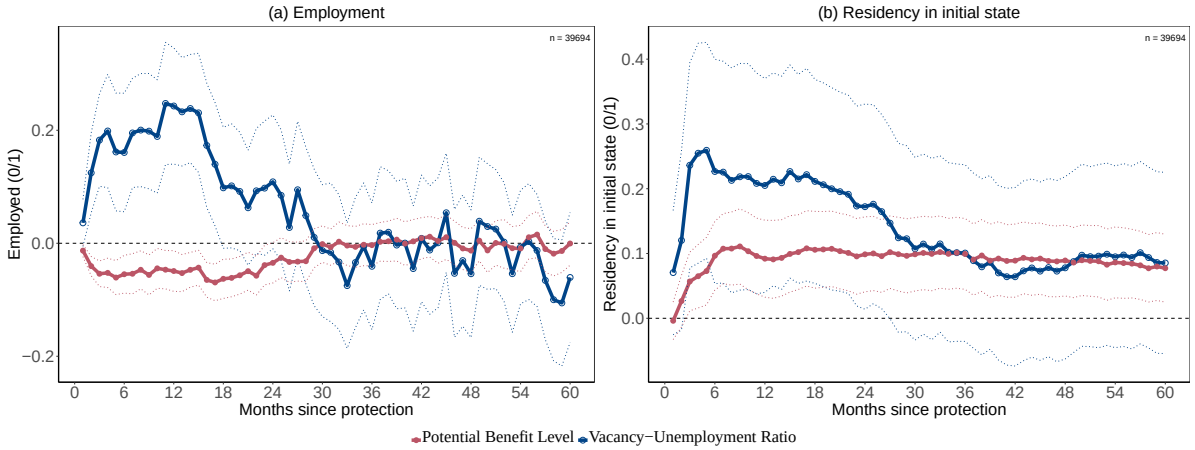
Together, these results indicate that refugees' decisions are driven by immediate constraints rather than long-term considerations. The immediate opportunities provided by these jobs facilitate the difficult transition from refugee shelters to independent housing. Once refugees have transitioned, they are more likely to remain in their original location. However, these initial job opportunities do not set refugees on a different career track with long-term implications.

Figure 10: Effect of $IVUR$ in seasonal occupations on employment and mobility



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the occupation-specific vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level.

Figure 11: Effect of the $IVUR$ for non-seasonal occupations and $IPBL$ on employment and location choice



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the occupation-specific vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level.

5.7 Robustness

We perform various robustness checks to test the sensitivity of our results to various sample restrictions and different specifications.

For our main specifications, we limited our sample to people who have been observed for a full 60 months. Since our data covers refugees up until they received protection in August 2023, we could run our estimations with an extended sample, which however would imply that the sample changes with different durations. Figure A.4 presents the results of our main findings without the restriction of being observed for 60 months. By including all refugees who received protection up to the start of 2021, our sample size increases to 45,666 individuals. The coefficients remain mostly unchanged, and the 95% confidence intervals become slightly narrower for earlier months.

Second, we only consider refugees, for whom we can determine in our data that they were in an initial reception facility at the beginning of their stay in Austria. For this group of 13,020 individuals, the assumption of exogenous placement is particularly credible. Figure A.5 shows the main results for this sample. Again, the overall patterns remain similar, with the effects of $IPBL$ on employment being somewhat smaller in magnitude.

In a related spirit, we exclude individuals who received protection within one month after first registering in Austria. This unusually quick process might still hint at individuals who came via family reunification.[25] This tighter restriction excludes 2,036 observations, leaving a sample of 37,658 observations. However, results remain virtually unchanged (see Figure A.6).

Third, we exclude individuals who received protection within four months of any of the welfare reforms. For these individuals, the $IPBL$ treatment is hard to interpret, as their benefit level changes immediately before/after receiving protection. As this concerns only 674 individuals, results hardly change from the main specification (see Figure A.7).

Fourth, we exclude individuals who moved between states in the month before receiving protection. This concerns 6,428 individuals. We suspect that these individuals already knew about the imminent granting of a protection status and moved preemptively. Figure A.8 shows that excluding these observations leaves the results practically unchanged.

Finally, we change the specification and use month- and year-of-protection fixed effects separately instead of month-year-fixed effects. Also, this modification does not alter the results meaningfully (see Figure A.9).

Overall, we conclude that our results are robust to various changes in the sample and

[25] In the main specification, we exclude individuals who received protection on the same day as they registered in Austria.

specification.

6 Conclusion

This study examines the interplay between local labor market conditions and welfare generosity on the labor market integration and internal mobility of refugees. Utilizing detailed register data, we analyze how refugees respond to the conditions they encounter when their choice set expands upon receiving protection. Many initially dispersed refugees relocate as soon as they are allowed. Their decision to relocate is influenced by both labor demand and welfare generosity in the location where they were first placed.

We show that labor demand, particularly in occupations with low entry barriers, immediately and significantly increases labor force participation among men. However, this effect fades away after 2.5 years. In turn, high labor demand raises the likelihood of staying in the assigned state permanently. Higher benefit levels decrease the likelihood of relocation but temporarily lower men's employment levels and more persistently affect women's employment, although the effect sizes are relatively small.

Lastly, when looking at the interaction of both labor demand and benefit levels, we find that changes in welfare benefits have a stronger effect on employment rates when labor demand is high and are negligible otherwise, supporting similar findings for Denmark (Dustmann et al., 2024).

By examining both relocation and employment, we show that increased labor demand encourages refugees to remain in their state and secure employment rather than relocate to another state without employment. Higher benefit levels have a minor negative effect on the probability of securing employment in the initial state but increase the likelihood of remaining without employment instead of moving and being unemployed elsewhere. Overall, our findings suggest that mobility responses to initial labor demand conditions and welfare benefit levels are more reflective of short-term needs than long-term optimization regarding labor market prospects, resembling the findings of work-first policies (Arendt, 2022; Arendt and Bolvig, 2023).

From a policy perspective, our findings show that supporting refugees finding employment at the moment or even before receiving protection might help keep them from moving to other regions. Additionally, they highlight the importance of taking into account the labor market conditions of the districts where refugees are allocated when assigning them to these regions. At the same time, changing benefits will only affect labor market integration in strong labor markets, which has important implications for the current debates on welfare reforms for refugees across Europe.

References

Adda, J., C. Dustmann, and J.-S. Görlach (2022): "The dynamics of return migration, human capital accumulation, and wage assimilation," *The Review of Economic Studies*, 89, 2841–2871.

Agersnap, O., A. Jensen, and H. Kleven (2020): "The Welfare Magnet Hypothesis: Evidence from an Immigrant Welfare Scheme in Denmark," *American Economic Review: Insights*, 2, 527–542.

Aksoy, C. G., P. Poutvaara, and F. Schikora (2023): "First time around: Local conditions and multi-dimensional integration of refugees," *Journal of Urban Economics*, 137, 103588.

Albert, C. and J. Monras (2022): "Immigration and spatial equilibrium: the role of expenditures in the country of origin," *American Economic Review*, 112, 3763–3802.

Arendt, J. N. (2022): "Labor market effects of a work-first policy for refugees," *Journal of Population Economics*, 35, 169–196.

Arendt, J. N. and I. Bolvig (2023): "Trade-offs between work-first and language-first strategies for refugees," *Economics of Education Review*, 92, 102353.

Azlor, L., A. P. Damm, and M. L. Schultz-Nielsen (2020): "Local labour demand and immigrant employment," *Labour Economics*, 63, 101808.

Barsbai, T., A. Steinmayr, and C. Winter (2024): "Immigrating into a Recession: Evidence from Family Migrants to the U.S." *Journal of Labor Economics*, forthcoming.

Battisti, M., G. Peri, and A. Romiti (2022): "Dynamic Effects of Co-Ethnic Networks on Immigrants' Economic Success," *The Economic Journal*, 132, 58–88.

Baumgartner, S., A. Stomper, T. Schober, and R. Winter-Ebmer (2023): "Banking on Snow: Bank Capital, Risk, and Employment," Working Papers 2023-02, Auckland University of Technology, Department of Economics.

Borjas, G. J. (1999): "Immigration and welfare magnets," *Journal of labor economics*, 17, 607–637.

——— (2001): "Does immigration grease the wheels of the labor market?" *Brookings papers on economic activity*, 2001, 69–133.

Bratsberg, B., O. Raaum, and K. Røed (2020): "Immigrant Responses to Social Insurance Generosity," *Labour Economics*, 65, 101854.

Brell, C., C. Dustmann, and I. Preston (2020): "The Labor Market Integration of Refugee Migrants in High-Income Countries," *Journal of Economic Perspectives*, 34, 94–121.

Brunner, B. and A. Kuhn (2014): "The impact of labor market entry conditions on initial job assignment and wages," *Journal of Population Economics*, 27, 705–738.

Chiswick, B. R., Y. Cohen, and T. Zach (1997): "The Labor Market Status of Immigrants: Effects of the Unemployment Rate at Arrival and Duration of Residence," *Industrial and Labor Relations Review*, 50, 289–303.

Chiswick, B. R. and P. W. Miller (2002): "Immigrant Earnings: Language Skills, Linguistic Concentrations and the Business Cycle," *Journal of Population Economics*, 15, 31–57.

Damm, A. P. (2009): "Determinants of recent immigrants' location choices: quasi-experimental evidence," *Journal of population Economics*, 22, 145–174.

Damm, A. P. and M. Rosholm (2010): "Employment effects of spatial dispersal of refugees," *Review of Economics of the Household*, 8, 105–146.

Dustmann, C., R. Landersø, and L. H. Andersen (2024): "Refugee Benefit Cuts," *American Economic Journal: Economic Policy*, 16, 406–441.

Fasani, F., T. Frattini, and L. Minale (2022): "(The Struggle for) Refugee integration into the labour market: evidence from Europe," *Journal of Economic Geography*, 22, 351–393.

Ferwerda, J., M. Marbach, and D. Hangartner (2023): "Do immigrants move to welfare? Subnational evidence from Switzerland," *American Journal of Political Science*.

Godøy, A. (2017): "Local labor markets and earnings of refugee immigrants," *Empirical Economics*, 52, 31–58.

Hatton, T. J. (2020): "Asylum migration to the developed world: Persecution, incentives, and policy," *Journal of Economic Perspectives*, 34, 75–93.

Huber, P. and F. Dellinger (2022): "The Impact of Welfare Benefits Reforms on the Mobility of Refugees," .

Monras, J. (2023): "Why Immigration Is an Urban Phenomenon," *FRBSF Economic Letter*, 2023, 1–5.

Müller, T., P. Pannatier, and M. Viarengo (2023): "Labor market integration, local conditions and inequalities: Evidence from refugees in Switzerland," *World Development*, 170, 106288.

Schilling, P. and S. Stillman (2021): "The Impact of Natives' Attitudes Towards Immigrants on Their Integration in the Host Country," .

Statistik Austria (2024): "Statistical Data for Austria, 2024," `https://www.statistik.at`.

von Wachter, T. (2020): "The Persistent Effects of Initial Labor Market Conditions for Young Adults and Their Sources," *Journal of Economic Perspectives*, 34, 168–194.

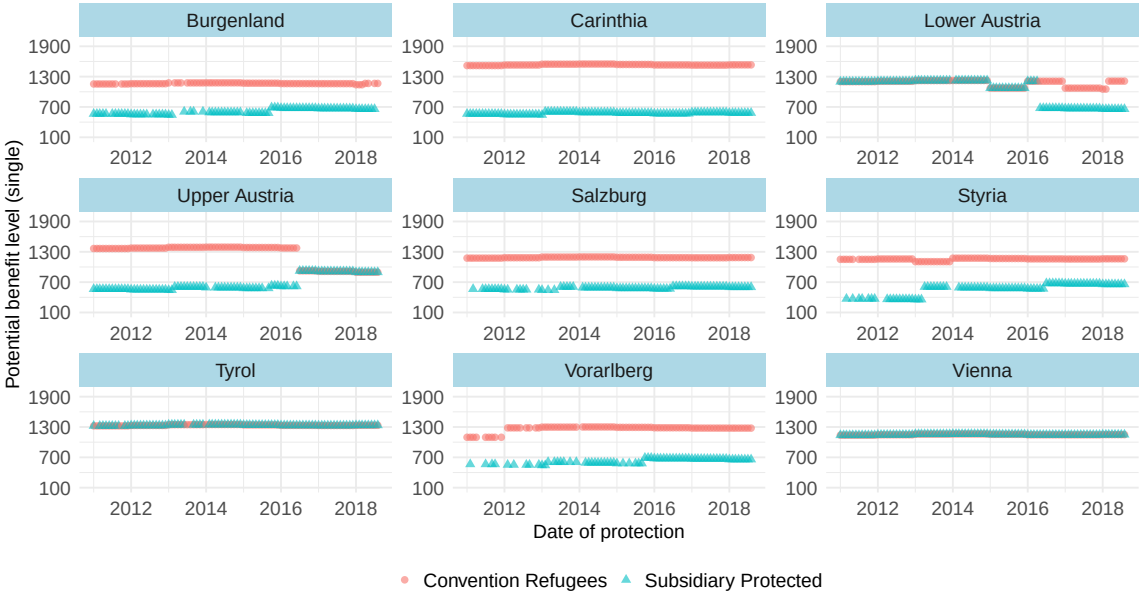
Åslund, O. and D. Rooth (2007): "Do When and Where Matter? Initial Labour Market Conditions and Immigrant Earnings," *The Economic Journal*, 117, 422–448.

Appendix

A Additional Tables and Figures

A.1 Welfare benefit levels for refugees (families) by federal state

Figure A.1: Welfare benefit levels for refugees (families) by federal state



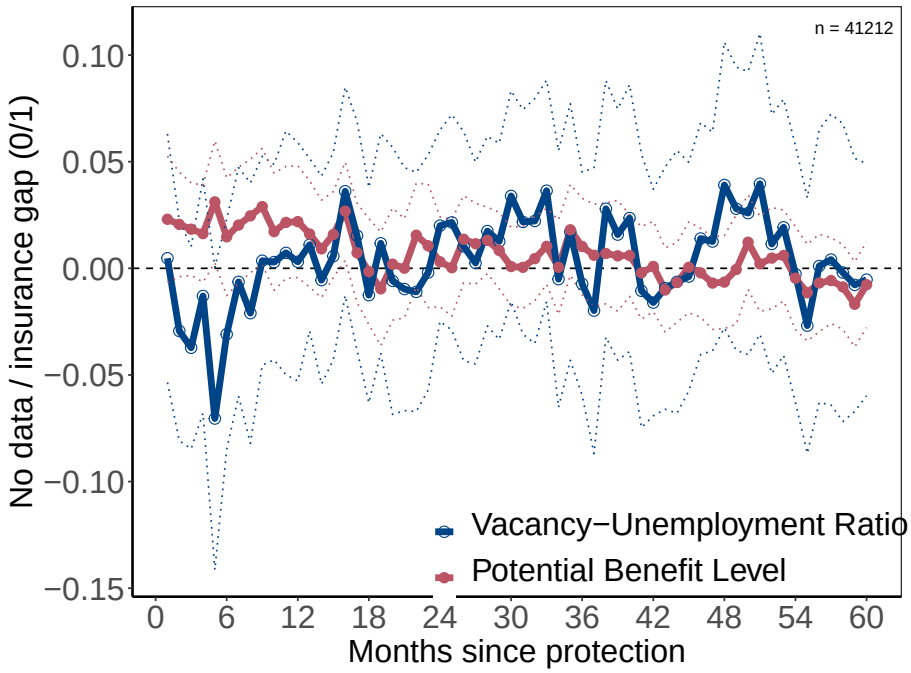
Notes: The figure shows the amount of monthly benefits in euros (excluding housing benefits) for families consisting of two adults and two children by federal state and type of protection.

A.2 Effect on likelihood to remain in Austria

To test for potential sample selection, we evaluate whether $IVUR$ and $IPBL$ affect the likelihood of remaining in Austria, indicated by maintaining an active social insurance spell. Figure A.2 illustrates the impact of a one-unit rise in $IVUR$ and a 1,000 euro increase in $IPBL$ over time. It displays the month-specific coefficients $\beta_{1,t}$ and $\beta_{2,t}$ from our main model (Equation 4.1) for the initial 60 months post-protection.

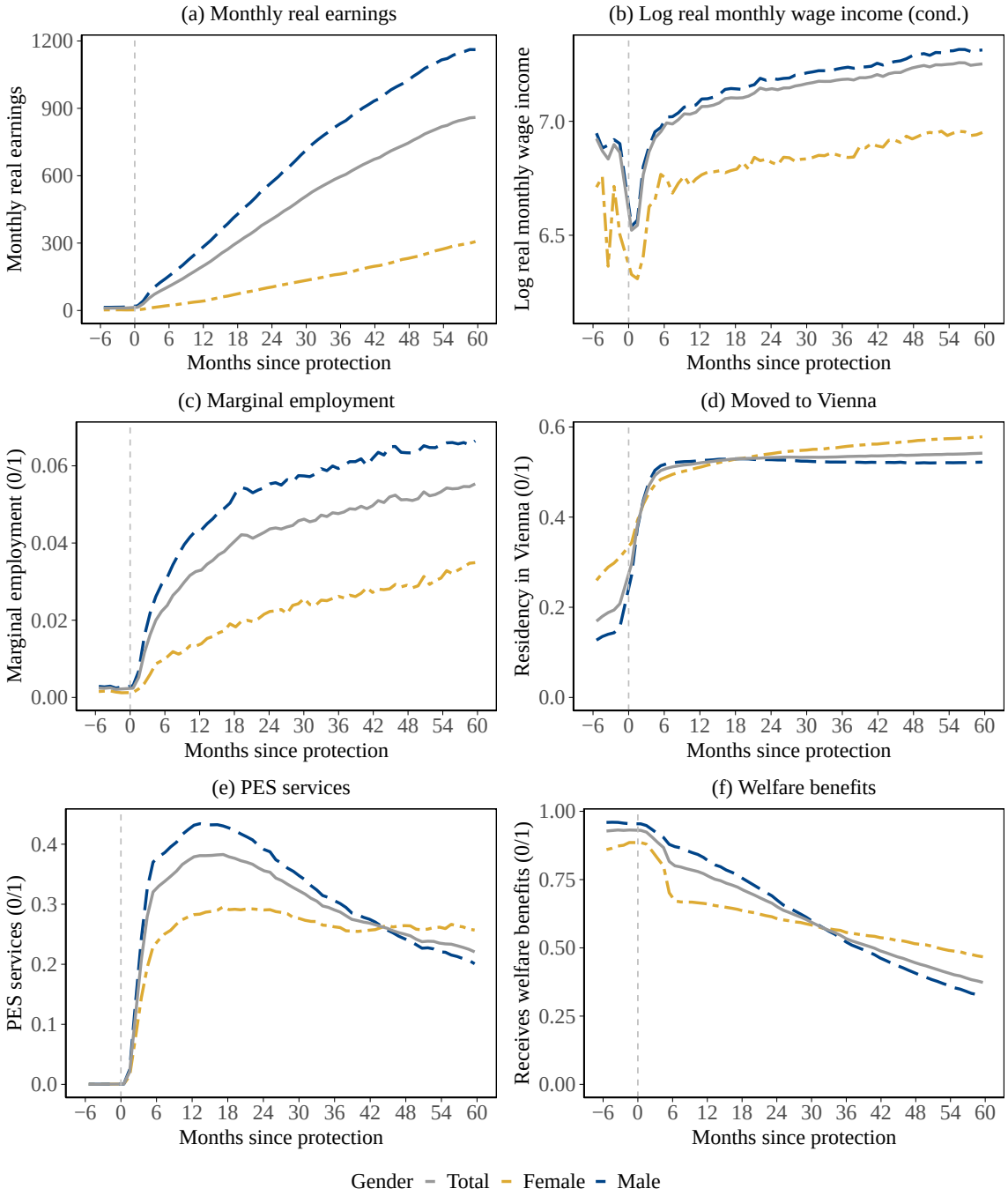
$IVUR$ and $IPBL$ have no effect on the likelihood of remaining insured in Austria. In essence, higher labor demand or increased welfare benefits do not influence the decision to stay in or leave Austria. While interesting in itself, this observation enables us to proceed with our study using a smaller cohort of 39,694 individuals who are still present in Austria after five years, since the selection process appears not to be influenced by our variables of interest.

Figure A.2: Effect of $IVUR$ and $IPBL$ on the probability of remaining insured in Austria



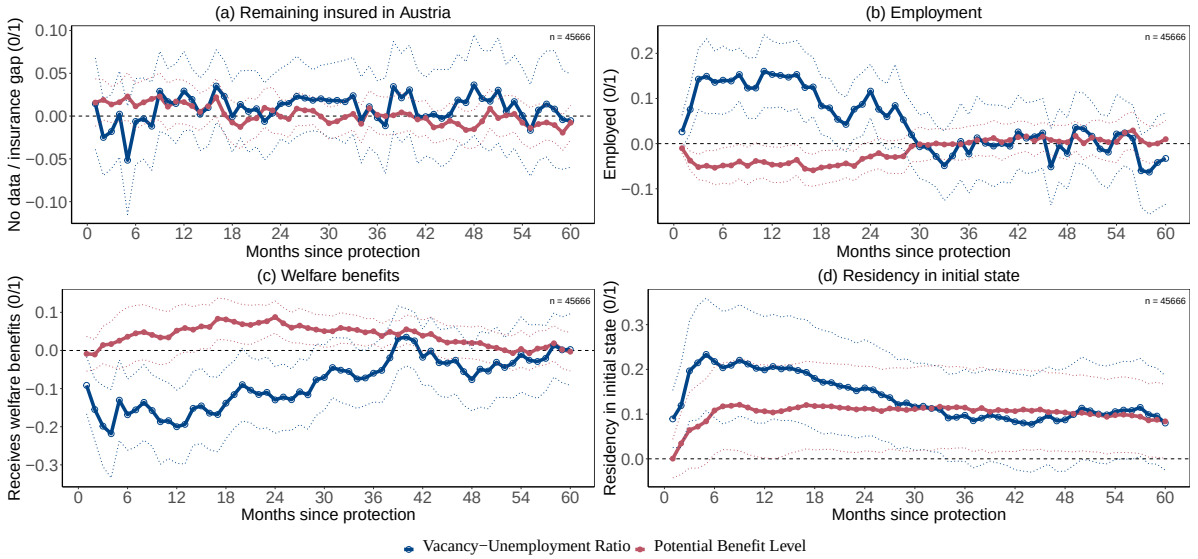
Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values) on having an active social insurance spell. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin (see Equation 4.1). Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.3: Shares and means of selected outcome variables for refugees by months since protection was received



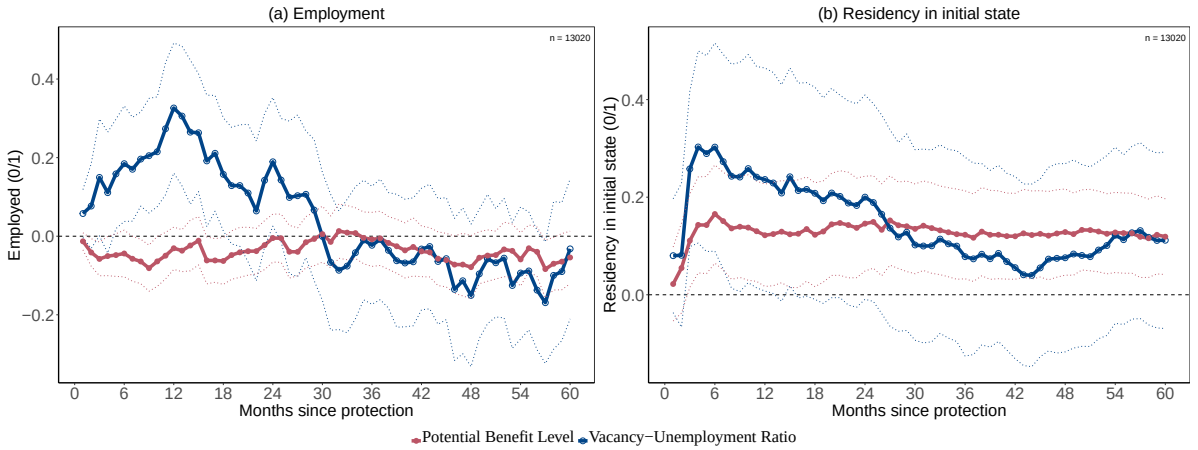
Notes: The x-axis shows the months since protection was received. The y-axis displays either the means of (a) monthly real earnings (in 2015€) and (b) log real monthly wage income (conditional on receiving any income) or the shares of refugees in (c) marginal employment, (d) residing in Vienna, (e) receiving support by the PES and (f) receiving basic needs support, by gender.

Figure A.4: Effect of the IVUR and IPBL on selected outcomes: Asylum until 2021



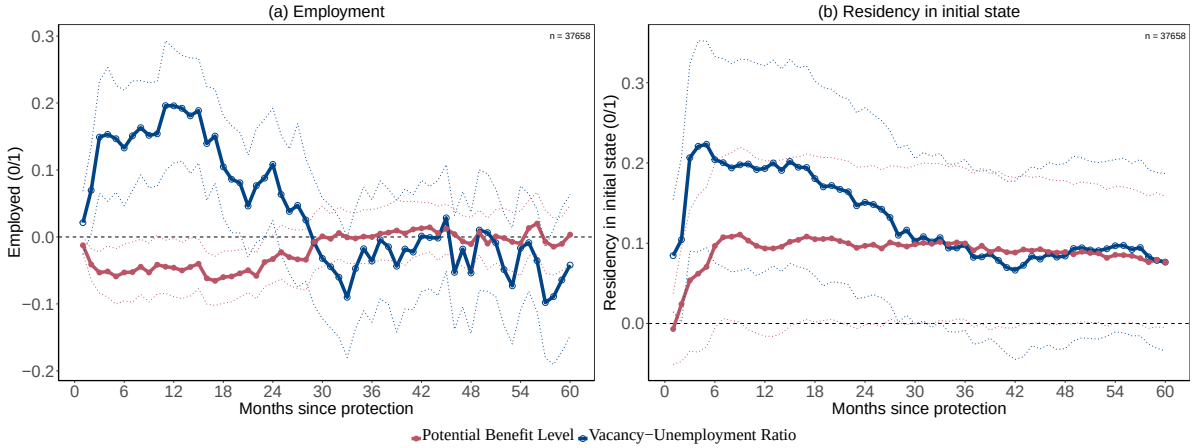
Notes: This figure shows selected main outcomes without placing restrictions on being observed for 60 months yet. The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-unemployment ratio or ii) the potential benefit level, measured in €1000 (real 2015 values), on selected outcomes. The panels show the effects on (a) remaining insured in Austria; panel (b) having any type of part- or full-time employment; panel (c) the probability of receiving welfare benefits; and panel (d) the probability of living in the initial political district. All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.5: Effect of the $IVUR$ and $IPBL$ on employment and location choice for those who initially lived in a reception facility



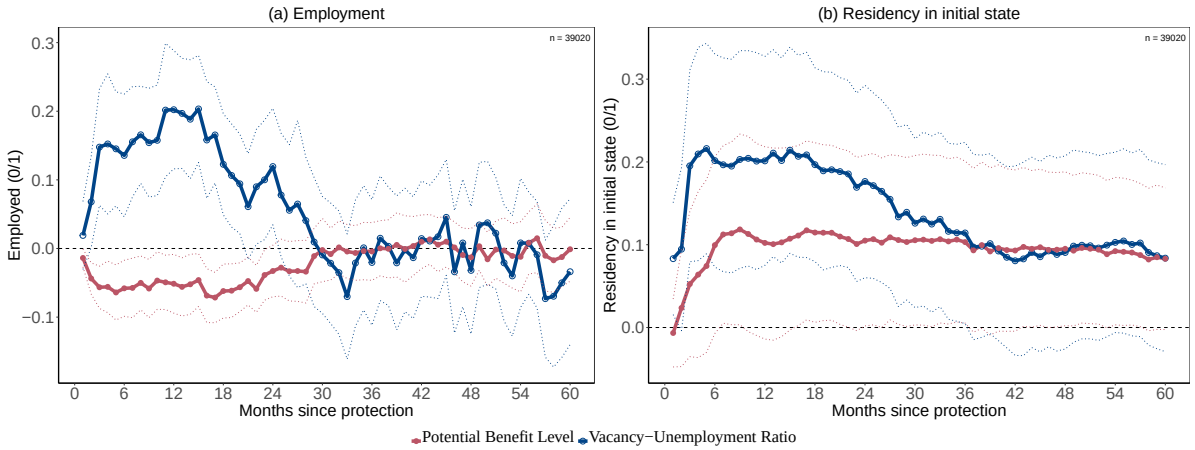
Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.6: Effect of the $IVUR$ and $IPBL$ on employment and location choice for those with asylum processes longer than one month



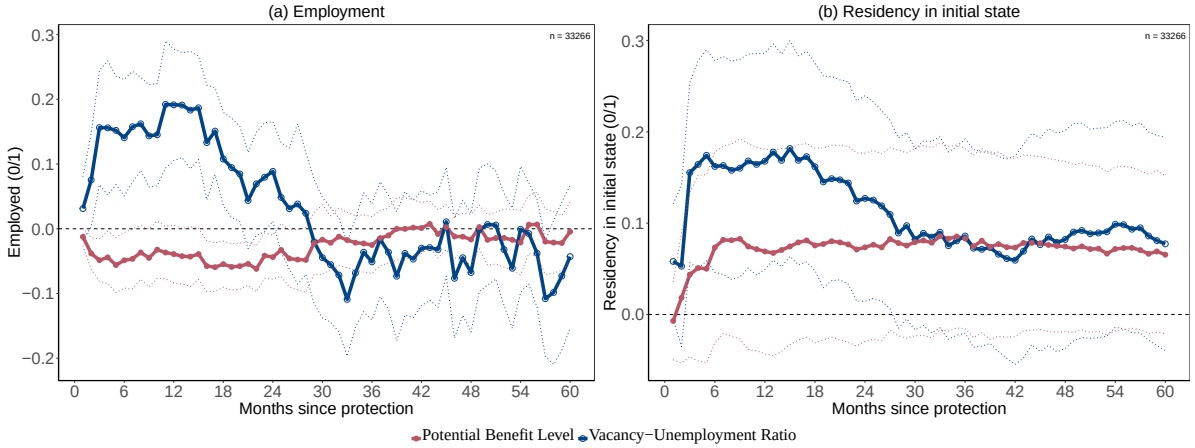
Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.7: Effect of the $IVUR$ and $IPBL$ on employment and location choice excluding protection within four months of reform



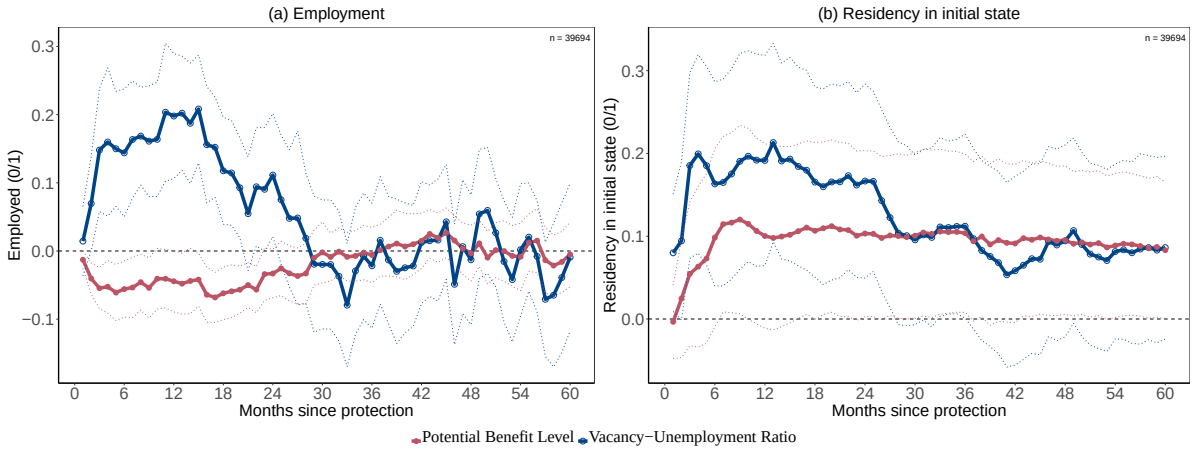
Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.8: Effect of the $IVUR$ and $IPBL$ on employment and location choice for those who lived in their state at least one month prior to receiving protection



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

Figure A.9: Effect of the $IVUR$ and $IPBL$ on employment and location choice with year and month fixed effects



Notes: The x-axis shows the months since protection was received. The y-axis displays the effect of a one-unit increase in either i) the vacancy-to-unemployment ratio or ii) the potential benefit level, measured in €1,000 (real 2015 values), on employment (left) and mobility (right). All regressions include a full set of arrival-group, year-month, and district-of-protection fixed effects. Additional control variables include age and age squared at immigration, gender, type of protection, family status at protection date, and country of origin. Standard errors are clustered at the state-year-of-protection level. Dashed lines indicate 95% confidence intervals.

B Data Appendix

B.1 Sample selection: registrations at the PES

In our dataset, we only have information on the status granted and the date of asylum for those individuals who registered at the Public Employment Services (PES). Hence, there could be a concern that our shocks (*IVUR* and *IPBL*) correlate with the probability of registering at the PES and might bias our results.

Using our registry data (ASSD), we collapse the number of individuals by sex and citizenship living in district d at the moment of getting asylum by year of protection for 2011–2020. We keep only individuals from the top 8 asylum-applicant countries: Afghanistan, Iraq, Iran, Kosovo, Nigeria, Russia, Somalia, and Syria.

We merge these collapsed headcounts of refugees with the total population of foreigners from the top 8 asylum-applicant countries at the district level as of January 1 of the following year. These are data provided by STATcube by country of birth and gender and are stocks as of January 1 of each year. For example, we merge the headcounts by protection status of those individuals who received protection in 2015 with the total population of foreigners from these countries in a district as of January 1, 2016. We then divide our ASSD headcounts on refugees by status by the total population of individuals from these eight asylum-applicant countries at the district level to obtain a share of refugees with a status among the foreign population.

Additionally, we merge the yearly averages of *IVUR* at the district level and the ones from *IPBL* at the state level by year of protection. Finally, we run a regression of the share of refugees with status among the foreign population on our treatment variables, year, district, nationality, and type of protection fixed effects.

Table B.1 presents these results. The first three columns show the results for shares by nationalities as outcomes, while the latter three columns use the aggregated shares for all top 8 asylum-applicant countries as outcomes. The coefficients for the *IVUR* are positive but statistically not significant in columns (1)-(3). Since our dependent variable ranges from zero to one, a one unit increase in the *IVUR* would increase the share of (registered) refugees in a district by 2.4 pp. To put this in standard increase terms, as in our main analysis, a 0.2 units increase in the *IVUR* would increase the share of registered refugees by 0.4 pp., which is relatively small compared to the effect sizes we find in our main specification. In columns (4)-(5), where we use the overall shares as an outcome, the effect of the *IVUR* becomes statistically significant at the 5% level. This positive relation hints at a positive effect of *IVUR* on registration with the PES. If the individuals who register when labor demand is high but not

Table B.1: Correlation of initial vacancy-to-unemployment ratio and initial potential benefit level with the share of refugees in a district

	(1)	(2)	(3)	(4)	(5)	(6)
	Shares by nationalities			Aggregated shares		
	All	Females	Males	All	Females	Males
IVUR	0.0237	0.0329	0.0423	0.0303**	0.0365***	0.0257
	(0.0313)	(0.0217)	(0.0358)	(0.0143)	(0.0091)	(0.0185)
IPBL - singles	0.0358	-0.0372	0.0458	0.0229	-0.0014	0.0363
	(0.0583)	(0.0324)	(0.0559)	(0.0364)	(0.0360)	(0.0383)
IPBL - family	-0.0042	0.0512**	-0.0144	-0.0099	0.0050	-0.0175
	(0.0412)	(0.0252)	(0.0388)	(0.0265)	(0.0256)	(0.0280)
Year FE	X	X	X	X	X	X
District FE	X	X	X	X	X	X
Refugee status FE	X	X	X	X	X	X
Nationality FE	X	X	X	-	-	-
Observations	14,480	13,542	14,278	1,874	1,866	1,874
R2	0.10538	0.09803	0.10060	0.53078	0.50619	0.49249

Notes: Coefficients from OLS regressions of the share of refugees in the total foreign population of refugee-origin countries at the district level on the $IVUR$ and $IPBL$. Columns (1)-(3) regress the shares by nationalities on the covariates and nationality fixed-effects. Columns (4)-(6) regress the aggregated shares for all top 8 refugee-origin countries on the covariates, without nationality fixed-effects. Since the regressions are at the district level, we include both benefits averages, by singles and families. Each share is calculated by country of origin and gender. The regressions include controls for year, district, nationality, and type of protection fixed-effects. Standard errors are clustered at the district-year-of-protection level. */**/*** denote statistical significance at the 10/5/1 percent level.

otherwise are individuals who are relatively more inclined to take up employment, our estimates for the effect of $IVUR$ on employment might be upward biased. However, the magnitude of such a bias is minor.

For the $IPBL$, the only significant coefficient is the one for the family benefits on the share of registered females in column (2) but not when aggregating the shares across nationalities. Given the low share of singles and the low employment rates for women, they do indeed mostly qualify for family benefits. Thus, higher benefit levels might indeed have increased the incentive to register at the PES in order to receive benefits. These positive benefits effects on the registration of female refugees might bias our estimates of $IPBL$ on benefit receipt upward and on employment downwards. However, since the effect is again small in magnitude, we consider the size of such potential biases again to be minor.

Overall, these effects are small and only significant for females, who represent 30% of our sample. They could, however, indicate an upward bias of our effects.

B.2 Welfare benefits

This section provides a comprehensive overview of the welfare benefits system for vulnerable foreign nationals in Austria and explains the creation of the measure for the potential benefit level. The welfare system is subject to federal states and differs significantly between states, time, protection status (convention refugees, persons entitled to subsidiary protection, and displaced persons), and family status. During the analysis period, two sources of potential welfare benefits were relevant for refugees: *Grundversorgung* (basic subsistence support), and *Bedarfsorientierte Mindestsicherung* (BMS).

Possible welfare benefits are divided into housing support benefits (recurring expenses for rent, heating, electricity, and other charges) and living expenses (food, clothing, healthcare). In this paper, we consider only the benefits to cover the cost of living.[1]

Grundversorgung (basic subsistence support)

Basic subsistence support provides aid to cover basic needs for vulnerable individuals during the ongoing asylum process and for some groups also after the asylum process. The *Grundversorgungsvereinbarung* under Article 15a of the Federal Constitutional Law (B-VG) between the federal government and the states was introduced on May 1, 2004. The law specifies the eligible persons and the types of support services and also defines uniform admission conditions and maximum cost rates for the entire country. This agreement ensures that basic subsistence support is implemented similarly across Austria, while still leaving the specific implementation to the federal states.

Eligible Persons. According to the *Grundversorgungsvereinbarung*, the following vulnerable and protected foreigners are eligible for basic subsistence support:

- Asylum seekers until the final conclusion of the process
- Persons entitled to subsidiary protection
- Convention refugees during the first four months after asylum recognition
- Persons with a legally negative outcome of the asylum process and persons without a residence permit if they are not deportable for legal or factual reasons
- Persons with a specific residence permit for reasons worth considering (displaced persons)

[1] The Austrian welfare system knows a range of other support measures, such as child allowance, care allowance and others. Those also partly differ between states. We do not consider these measures as part of our benefit level, as they have not changed together with the benefit reforms we consider. Thus, any variation in those benefits would be eliminated by the fixed effects.

For the context of this paper, it is worth highlighting that basic subsistence support is the respective welfare system for subsidiary-protected but not convention refugees. Those switch to a different welfare system after being granted the protection status. This change happens within four months of receiving protection

Income limits. Basic subsistence support may be terminated or restricted if the income exceeds 110 Euros.

B.2.1 Housing support

The basic subsistence support system has two forms of accommodation support: individual and organized living.

- **Individual living:** Rent allowance for individuals or families, food allowance for adults, minors, or unaccompanied minors.
- **Organized living:** Meals are either provided by the shelter or individuals receive a food allowance, max. 40 euro pocket money/month, max 10 euro recreational money/month.

Additional services may be provided depending on needs and situation (school supplies max. 200 euro/year, transport costs, funeral costs, information and counseling, clothing assistance max. 150 euro/year, pocket money). Our dataset only includes basic subsistence support benefits for food and rent in individual accommodation per person per month.

B.3 Bedarfsorientierte Mindestsicherung BMS (minimum income support)

In 2010, Austria introduced the "Bedarfsorientierte Mindestsicherung" aimed to prevent poverty and social exclusion. Individuals have a general legal entitlement to minimum income support if they cannot cover their basic needs through their own means or priority social benefits (pensions, unemployment benefits, etc.). However, existing income and assets must be used up before accessing minimum income support. In addition, people must show a willingness to take up employment.

B.3.1 Eligible Persons

Conventions refugees are entitled to minimum income support from the time they are granted protection status.[2] In Tyrol and Vienna persons entitled to subsidiary protection receive additional benefits from minimum income support. Thus, benefit levels for subsidiary-protected and convention refugees do not differ.

[2]They need to move out of basic income support within four months after receiving protection.

B.3.2 Components of minimum income support

The minimum income support consists of two parts: a basic amount to cover cost of living and a share to cover housing costs. Monthly rates are set in the laws of the federal states. The monthly cash benefit for single persons is based on the compensatory allowance reference rate for single persons in pension insurance. This value also serves as a reference value for the minimum standards of other population groups (adults, minors). Minimum income support is calculated at the household level for multiple-person households.

B.3.3 Housing Support

The level of housing support is regulated differently in the various state execution laws. Generally, 25% of housing costs are included in the minimum standards. If the actual housing costs exceed this amount, the standard rate can be increased to 30%. These cash benefits may be limited upwards by set rent rates. For example, in Tyrol, housing support is based on the number of people in the household and the district to counteract higher local housing costs. In areas where differentiated housing costs apply, the benefits are calculated according to the set guidelines for the respective number of persons in the household and the specific district. In other regions where no differentiated housing benefits apply, the percentage minimum standard for housing support benefits for singles and families is calculated based on the initial amount.

B.3.4 Labor market and additional income limits

Individuals are only entitled to minimum income support if they cannot cover their basic needs through their own means, benefits with higher priority (e.g., unemployment benefits), their own labor, or the use of income and assets. The exempt asset amount is about 5,200 euros. Minimum income support has a higher earnings limit and smoother phase-in rules than basic income support. The specific amounts depend on prior employment and the duration of benefit receipt.

B.3.5 Reforms of the benefit system

Major welfare benefit reforms happened since 2016 in Lower Austria, Upper Austria, and Burgenland, as described by Huber and Dellinger (2022). Based on the Table A5 of their working paper, we summarize here the most relevant aspects of the reforms:

1. **Lower-Austria:** In April 2016, the state revoked minimum income support (BMS) eligibility for **subsidiary-protected refugees**. For example, for a single adult, benefits were reduced by 66% (from 838 to 365 euros).

2. **Upper Austria:** In July 2016, the state lowered the minimum income standard **for both subsidiary-protected and convention refugees** who came to Austria after November 15th, 2015. The new minimum income standard was 522 euros. In November 2018, the European Court of Justice revoked the reform.

3. **Lower Austria:** In January 2017, the state introduced a new minimum income standard for **convention refugees** residing in Austria for less than 5 of the past 6 years. Single adults were eligible for 572.50 euros, while families and people living in a shared flat, got a cap of 1,500 euros regardless of household size. The Constitutional Court revoked the reform in March 2018.

4. **Burgenland:** In April 2017, the state introduced a new minimum income standard for **convention refugees** residing in Austria for less than 5 of the past 6 years. Single adults were eligible for 585 euros, while families and people living in a shared flat, got a cap of 1,500 euros regardless of household size. The Constitutional Court revoked the reform in March 2018.