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# Hiring Refugees as Apprentices: The Role of Skills, Signals, and Policy Interventions

Christina Felfe<sup>1</sup>  
Lukas Kagerbauer<sup>2</sup>  
Max Müller<sup>3</sup>  
Christoph Sajons<sup>4</sup>  
Judith Saurer<sup>5</sup>  
Thomas Zwick<sup>6</sup>

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- <sup>1</sup>University of Konstanz, CEPR, CESifo & IZA, Email: [christina.felfe@uni-konstanz.de](mailto:christina.felfe@uni-konstanz.de)  
<sup>2</sup>IHK Würzburg & University of Würzburg, Email: [lukas.kagerbauer@uni-wuerzburg.de](mailto:lukas.kagerbauer@uni-wuerzburg.de)  
<sup>3</sup>University of Bonn, Email: [max.mueller@uni-bonn.de](mailto:max.mueller@uni-bonn.de)  
<sup>4</sup>University of Mannheim & MZES, Email: [sajons@uni-mannheim.de](mailto:sajons@uni-mannheim.de)  
<sup>5</sup>THW Würzburg-Schweinfurt, Email: [judith.saurer@thws.de](mailto:judith.saurer@thws.de)  
<sup>6</sup>University of Würzburg, ZEW & ROA, Email: [thomas.zwick@uni-wuerzburg.de](mailto:thomas.zwick@uni-wuerzburg.de)

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# Hiring Refugees as Apprentices: The Role of Skills, Signals, and Policy Interventions\*

*Christina Felfe, Lukas Kagerbauer, Max Müller,  
Christoph Sajons, Judith Saurer, and Thomas Zwick<sup>†</sup>*

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## Abstract

Do refugees face systematic disadvantages in the apprenticeship market and what measures can mitigate them? We address these questions using a combination of discrete choice experiments and information treatments involving 800 firms in Germany. Our findings show that refugees are much less likely to be accepted for apprenticeships than their native counterparts, unless they are substantially better qualified in terms of formal education. However, this gap can be significantly reduced through two key mechanisms: signaling soft skills such as discipline, motivation, and reliability, and implementing public policy programs that enhance job-specific language proficiency and job readiness.

*Keywords:* Labor shortages, Vocational training, Refugees, Soft skills, Integration policies

*JEL Classification:* J15, J24, J61, J68

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<sup>†</sup>Author affiliations and contacts: Christina Felfe (University of Konstanz, CEPR, CESifo & IZA, [christina.felfe@uni-konstanz.de](mailto:christina.felfe@uni-konstanz.de)), Lukas Kagerbauer (IHK Würzburg & University of Würzburg, [lukas.kagerbauer@uni-wuerzburg.de](mailto:lukas.kagerbauer@uni-wuerzburg.de)), Max Müller (University of Bonn, [max.mueller@uni-bonn.de](mailto:max.mueller@uni-bonn.de)), Christoph Sajons (University of Mannheim & MZES, [sajons@uni-mannheim.de](mailto:sajons@uni-mannheim.de)), Judith Saurer (TH Würzburg-Schweinfurt, [judith.saurer@thws.de](mailto:judith.saurer@thws.de)), Thomas Zwick (University of Würzburg, ZEW & ROA, [thomas.zwick@uni-wuerzburg.de](mailto:thomas.zwick@uni-wuerzburg.de)).

# 1 Introduction

Global crises — including conflict, displacement, and natural disasters — have forced millions to flee their homes. In 2026, the number of forcibly displaced persons exceeded 117 million worldwide (UNHCR, 2026), creating significant economic and social challenges for host countries. A key determinant of successful refugee integration is access to skilled employment, which fosters self-sufficiency and upward mobility (Foged et al., 2024a). At the same time, integrating refugees into skilled occupations could help alleviate acute labor shortages in certain professions in many advanced economies (Friedrich and Zator, 2024; Le Barbanchon et al., 2023). Yet skilled occupations often require formal credentials that most refugees cannot readily provide. In this context, company-based apprenticeships offer a particularly promising way to promote refugee integration and address firm vacancies simultaneously. Apprenticeships typically have low formal entry requirements, offer wages that cover basic living expenses, and provide widely-recognized qualifications (McCoshan and Markowitsch, 2022). Nevertheless, only a small share of refugees enter this form of training in developed countries (Jeon, 2019; Jørgensen et al., 2021), suggesting that other barriers may limit access.

In this study, we examine the employer side of the apprenticeship market as a potential bottleneck for refugee integration. More specifically, we aim to identify the key determinants of employers’ willingness to hire refugees for apprenticeship positions in their companies. Our analysis focuses on two aspects that may be particularly important in shaping these hiring decisions. The first is the role of soft skills, here signals of reliability, discipline, and motivation. Soft skills are especially relevant whenever employers face challenges in assessing applicants’ hard skills (Mergener and Maier, 2019), such as formal qualifications or previous professional experience in the case of refugees. However, most studies on the labor market integration of refugees do not include them in their considerations, as information on this important topic is typically not available. Second, we evaluate the effectiveness of policy interventions designed to reduce the uncertainty and net costs of hiring refugees for apprenticeships. Such interventions exist in many places and forms, yet we still lack a deeper understanding of how they affect the considerations of potential employers (Schuettler and Caron, 2020).

To rigorously assess what drives employers to hire refugees as apprentices, we conducted a multi-part survey experiment with representatives of close to 800 firms in Southern Germany that regularly offer vocational training.<sup>1</sup> We combined discrete choice experiments (DCE) with randomized information treatments to measure firms’ willing-

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<sup>1</sup> The different parts of this study were preregistered on AsPredicted.org under the registration numbers 69084, 69086, and 69087, respectively (<https://aspredicted.org/km3yy.pdf>, <https://aspredicted.org/np8nk.pdf>, and <https://aspredicted.org/um7w6.pdf>).

ness to hire refugees, identify the key determinants of these decisions, and evaluate the effectiveness of selected policy measures.<sup>2</sup> Specifically, survey participants completed five choice tasks in which they had to select one of two potential applicants for an apprenticeship position at their company. In addition, we asked them to rate each individual applicant on a five-point Likert scale to assess whether forced-choice patterns reflect underlying preferences. The applicants' profiles were constructed based on socio-demographic characteristics (e.g., legal status and gender), hard skills (e.g., education level and language proficiency), and signals of soft skills (e.g., school absences and internships) and varied within a constrained-randomization setup to ensure realistic decision situations.

We implemented three versions of the DCE and randomly assigned participants to one of them in a between-subjects design. In the first version, participants compared the profiles of a refugee and a low-skilled native applicant. This design allows us to quantify hiring gaps between refugees and natives and to assess the relative importance of hard and soft skills in driving these gaps. In the second version, participants chose between two refugee applicants. This way, we increase the comparability between the candidates and test whether the results of version 1 still hold in a more homogeneous choice set. In the third version, we returned to the mixed refugee-native setup and randomly embedded various information treatments that enhance the refugee profile with a specific policy intervention designed to promote the chances of refugees on the apprenticeship market. We examined three pilot policies that were either discussed or already tried out in Germany at the time of our study: (1) an additional year at the start of the regular apprenticeship dedicated mostly to job-specific language training, (2) an external mentoring program during training, and (3) an automatic residence and work permission throughout the apprenticeship and for two years after its successful completion. Comparing these enhanced versions to the baseline case without information treatments allows us to evaluate the impact of each intervention on refugees' apprenticeship prospects.

Germany provides a compelling setting for studying employers' willingness to train refugees. The country not only hosts the largest refugee population in the EU, it also offers a well-established and highly respected vocational training system that could facilitate integration into the labor market (Schreyer et al., 2018). However, despite strong interest among refugees in vocational training, participation rates remain low (Brücker et al., 2021; Ertl et al., 2022; Felfe et al., 2021). Our study aims to unravel this puzzle

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<sup>2</sup> We use the term *information treatment* because respondents were given factual information about existing or field-tested policy instruments rather than a hypothetical construct invented for the experiment. The 1+3 language program and the mentoring program already operated as limited pilot or field programs at the time of the survey; the automatic 3+2 rule built directly on the existing statutory 3+2 toleration but removes the discretionary eligibility requirements to convey a clearer legal guarantee. In all three cases, respondents were thus informed about a concrete, real-world-grounded policy design.

by examining the barriers to hiring refugees as apprentices and identifying potential solutions at the individual and policy level.

We find that refugees have a significantly lower average probability of being offered vocational training compared to low-skilled native applicants: across the head-to-head comparisons in our study, employers select the refugee candidate in only 39% of cases. In fact, even refugees who are formally better qualified do not have better chances to be hired than native applicants — a refugee with recognized asylum status, advanced (B2) German proficiency, and a tertiary degree is not statistically more likely to be selected than a German applicant holding only a lower-secondary degree. In line with existing literature on refugee employment, we also see that refugee applicants' chances for an apprenticeship improve with granted asylum, higher German language proficiency, and higher education levels.

In addition, our results show that signals of soft skills significantly affect refugees' employment prospects. More specifically, completing an internship increases the likelihood of being accepted for vocational training by 7 percentage points. Information that a candidate missed 10% or 20% of school days on the other hand reduces the probability of being hired by 26 and 35 percentage points, respectively, relative to regular school attendance. These estimates highlight the large value employers place on soft skills like motivation and reliability in their hiring decision. By contrast, the evidence on the effect of the different policies is mixed. An extension of the apprenticeship to include a preparatory job-specific language course before the start of the actual apprenticeship raises refugees' hiring chances by 8 percentage points, whereas the other two policies appear to be largely ineffective, even for applicants from the groups most likely to benefit from them.

A central motivation for integrating refugees into apprenticeships is the hope that they can help close growing shortages of skilled labor. Our heterogeneity analysis casts doubt on this expectation. Contrary to the idea that firms struggling to fill positions would turn to refugees as an untapped source of labor, companies operating in tighter local labor markets are in fact 5 percentage points less likely to select a refugee than firms facing a more favorable supply of applicants. One possible explanation is that the costs of a failed or unfilled apprenticeship weigh more heavily where vacancies are hardest to fill. We do, however, identify one context in which reluctance is lower: firms with prior experience employing non-EU workers are 5 percentage points more likely to hire a refugee, possibly reflecting greater familiarity with assessing foreign qualifications and managing the associated administrative requirements. Taken together, these results suggest that refugees are unlikely to relieve labor shortages on their own, but that prior firm experience and lower uncertainty can meaningfully improve their prospects.

The paper contributes to several strands of literature. First, and most broadly, our re-

sults add to the extensive research on the labor market situation of migrants and (more recently) refugees. The employment and wage gaps between these groups and the native population are sizable and well documented (Brell et al., 2020; Fasani et al., 2022). Many factors contribute to this phenomenon, including low language proficiency (Dustmann and Fabbri, 2003; Foged et al., 2024b; Kanas and Kosyakova, 2023), institutional barriers – such as lengthy asylum processes (Hainmueller et al., 2016), initial employment bans (Marbach et al., 2018; Arendt et al., 2022), residency restrictions (Bansak et al., 2018a), and delays in occupational recognition (Brücker et al., 2021) – and discrimination in hiring decisions for regular jobs (Carlsson and Rooth, 2007; Bansak et al., 2016; Stempel and Alemi, 2021; Cattaneo et al., 2025). Our findings show that these systematic disadvantages also extend to the skilled vocational training sector, making it difficult for refugees to bypass existing entry barriers to the labor market by obtaining formal qualifications.

Second, our study relates to the literature on soft skills and their importance for labor market success (Heckman and Kautz, 2012; Heller and Kessler, 2022). Deming (2017) discusses the life-cycle returns to social skills, and Adhvaryu et al. (2023) provide empirical evidence on their role in workers’ productivity. Yet relatively little is known about the role of soft skills in the hiring process and in particular apprenticeship hiring, where firms invest substantial resources upfront and thus seek to minimize dropout risks. Our design allows us to causally identify the role of soft-skill signals in hiring decisions for refugees, a group whose hard skills are often difficult to evaluate due to missing, unrecognized, or unknown credentials (Mergener and Maier, 2019).

Third, we add to the literature evaluating the effectiveness of integration policies. For instance, Arendt et al. (2022) examine Denmark’s integration policies over the past 40 years and find that only two measures consistently demonstrate benefits that outweigh their costs: permitting refugees to select their settlement locations and implementing active labor market programs aimed at enhancing language skill investments. Similarly, Foged et al. (2024a) observe that improved language training, coupled with the initial placement of refugees in robust labor markets, leads to significantly better long-term labor market outcomes for refugees. Most recently, Hainmueller et al. (2026) show that large-scale intensive job search assistance in the early stage of integration can lead to a substantial improvement in refugees’ labor-market outcomes. We complement these existing studies that evaluate actual policies *ex post* by assessing several interventions that so far only exist as pilot programs or promising variations of existing measures before any large-scale rollout.

The remainder of the paper is structured as follows: Section 2 presents the labor market situation of refugees in Germany and the German vocational training system. Section 3 outlines the data collection process, the experimental design, and the empirical

framework. Section 4 summarizes our results, followed by validity tests and robustness checks in Section 5 and subgroup analyses in Section 6. Section 7 summarizes the results, points out the limitations of this study, and concludes.

## 2 Background

### 2.1 Refugees in Germany

Germany hosts the second largest refugee population in the world and the largest in the EU, with 2.7 million refugees from all over the world (UNHCR, 2026). The country has experienced several major waves of refugee arrivals, the most recent in 2022, when nearly a million people fled from Ukraine after the Russian invasion. This study focuses on the 2015–2016 wave that was caused by conflicts in the Middle East, especially in Syria and Iraq. In 2015, Germany received approximately 480,000 asylum applications, followed by a record high of 750,000 applications in 2016 (BAMF, 2024).<sup>3</sup>

The composition of the 2015–2016 refugee wave was remarkably young, with nearly three-quarters of individuals being younger than 30 and almost one-third younger than 18. Most refugees possessed limited formal education, even before taking into account the difficulties in recognizing foreign qualifications (Brücker et al., 2021).<sup>4</sup> Access to formal education, particularly vocational training, was therefore critical for successful labor market integration. However, even five years after arrival, only 14% of the refugees had participated in vocational training, with the number of applications declining over time (Brücker et al., 2021).

These low participation rates are disappointing, especially compared to the 77% of refugees who expressed interest in vocational training at the time (Brücker et al., 2020; Felfe et al., 2021). They are not surprising, however, considering that refugee applicants face substantially lower success rates (26%) compared to their native German counterparts (43%) (Ertl et al., 2022). This pattern suggests a large, untapped potential for integrating refugees into vocational education and, ultimately, sustainable employment.

### 2.2 Vocational training and labor market conditions

The German vocational training system follows a dual approach, combining supervised on-the-job training with classroom instruction at specialized state-funded schools. This

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<sup>3</sup> Excluding 2015 and 2016, the average number of asylum applications in Germany is approximately 200,000 per year (BAMF, 2024).

<sup>4</sup> Statistics on refugees' educational backgrounds are incomplete, covering only 73% of those who arrived in Germany in 2015–16 (Juran and Broer, 2017). Among this subset, 7% reported no formal education, 22% had completed only primary school, 20% secondary education, and 18% some tertiary education.

structure enables apprentices to gain both theoretical knowledge and practical experience in real work environments. Training periods are standardized, typically beginning in September and lasting between two and three and a half years, depending on the occupation.

Several features make the apprenticeship system particularly well-suited for integrating refugees into the labor market. First, work-based learning has been shown to be effective in facilitating the transition to skilled employment, especially for disadvantaged groups such as migrants and refugees (Kis, 2016). Second, entry barriers are relatively low: nearly half of all vocational training positions require only a basic secondary school diploma (BIBB, 2022), an advantage for refugees who often lack formally recognized qualifications. Third, vocational training is the primary pathway to skilled employment in Germany, with approximately 50% of school-leavers enrolling in apprenticeship programs (Game and Sageev, 2025). Its large capacity and flexibility make it well-positioned to absorb new entrants, including refugees.

For firms, the primary incentive to invest in vocational training is securing a pipeline of skilled workers. On average, 76% of apprentices remain with their training firm after completing their program (Fitzenberger et al., 2024). However, training apprentices is costly and requires substantial upfront investments while productivity gains materialize only gradually (Lerman, 2019). Consequently, apprentice failures and dropouts impose significant losses, also in light of the difficulty to fill vacancies mid-year given the standardized format of vocational training. In addition, firms increasingly struggle to recruit suitable candidates. In 2024, 35% of all advertised apprenticeship positions remained unfilled (Fitzenberger et al., 2024), exacerbating the already existing shortages of skilled labor. To illustrate the severity of these shortages, the vacancy time (the average number of days to fill an open position) amounted to 160 days in January 2024.

In light of these labor market imbalances, it is crucial to understand the factors that shape firms' hiring decisions and identify barriers that prevent them from offering apprenticeship opportunities to refugees. Unlocking the potential of refugees in apprenticeships could not only aid refugee labor market integration but also help mitigate skilled labor shortages.

## **3 Methodology**

### **3.1 Data collection**

To assess employers' willingness to hire refugees as apprentices, we collaborated with five Chambers of Industry and Commerce (IHK) and two Chambers of Crafts (HWK) in Southern Germany to conduct a web-based firm survey between August and October

2021.<sup>5</sup> The IHKs and HWKs invited firms that were active in apprenticeship training to participate either via email or through their online newsletters.<sup>6</sup> The stated objective of the survey was to understand firms' recent experiences and challenges in employee recruitment.

In total, 1,023 firm representatives started the survey and 797 of them completed the discrete choice experiment towards the end of the questionnaire. The latter group included 288 persons working in the Human Resources department, 180 employees in high-level management positions, 111 firm owners, and 78 administrative clerks, while the remaining respondents came from various other positions. The sample resembles the target group with respect to firm size and sectors (see Appendix Table A.1 for an overview of the distribution of firms across sectors and Appendix Table A.2 for an assessment of representativeness by size). The main difference to the population of training firms is that larger firms (i.e., those who employed more than 10 trainees at the time of the survey) are overrepresented and very small firms underrepresented in the sample. We will return to this issue in more detail in Section 5.

### 3.2 The Discrete-Choice Experiment

We embedded a discrete-choice experiment (DCE, also known as choice-based conjoint) within the firm survey to identify barriers to refugee hiring and the potential of specific policies to address them. The DCE is an extension of the contingent valuation literature: Rather than directly asking respondents to value certain attributes (the stated preference method), the DCE presents respondents with two or more hypothetical options with different sets of attributes (in our case, candidates for an apprenticeship) and asks them to choose one of them. The attributes vary randomly across options, which allows for causal identification of their effects on people's choices and their latent preferences. Recent applications of this technique examining issues related to the labor market or the integration of refugees include Mas and Pallais (2017), Bansak et al. (2021), Damelang and Kosyakova (2021), and Maestas et al. (2023).

Using a DCE offers several advantages (Bansak et al., 2021; Hainmueller et al., 2015): (1) They allow researchers to frame the choice situation in a way that closely mirrors the real-life decision context of the respondents. In our case, the respondents evaluate applicants for an apprenticeship in the predominant occupation within their firm, a context that reflects their regular work environment. (2) DCEs reduce social desirability

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<sup>5</sup> In total, there are 79 IHKs and 53 HWKs in Germany. An overview of the participating chambers and the respective numbers of firms in the sample can be found in Appendix Table A.1.

<sup>6</sup> In Germany, most firms must enroll with the local IHK and/or HWK. Furthermore, the chambers keep up-to-date lists of firms that train apprentices. The cooperation with these institutions therefore enabled us to specifically target the relevant group of firms in the respective areas.

bias because respondents must choose between competing candidate profiles and thus cannot simply rate all alternatives favorably. Furthermore, as the candidates typically differ on multiple dimensions, respondents can mentally rationalize and justify even socially sensitive decisions by referring to the importance of other attributes in this case. (3) DCEs allow researchers to estimate the causal effect of multiple attributes simultaneously and compare their relative importance within one experimental framework. (4) DCEs possess great flexibility with respect to defining and presenting the scenario, the relevant attributes under examination, and their specific levels, as well as the set of candidate profiles. The design thus enables testing reactions to both existing and hypothetical treatments of interest and to candidate types that may rarely appear among actual applicants. (5) Compared to correspondence studies, in which researchers send fictitious applications to real vacancies, DCEs raise fewer ethical concerns because they do not involve deception of employers.<sup>7</sup>

In our study, respondents completed five discrete choice tasks with two candidates each and therefore evaluated ten profiles in total. The order of profiles across tasks, as well as their left–right placement within each task, was fully randomized. The number of choice situations keeps the balance between generating sufficient within-respondent variation and minimizing dropouts and noise due to survey length and respondent fatigue (Bansak et al., 2018b; Galesic and Bosnjak, 2009). We chose a paired-conjoint design because side-by-side profile comparisons closely resemble real-world decision-making in hiring situations. Thus, paired-conjoint tests are well suited to reveal realistic hiring preferences (Hainmueller et al., 2015). On the downside, the forced-choice design focuses on relative rankings, because respondents must select someone even if they would reject both candidates. To be able to test whether these relative rankings are actually meaningful, we therefore additionally asked the firm representatives to individually rate each candidate’s chances to get a job offer on a five-point Likert scale. The precise wording used to introduce the DCE was as follows (our translation from the original German text in the questionnaire):

*We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the*

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<sup>7</sup> A common criticism of DCEs concerns their external validity, in particular, whether they capture actual behavior or merely hypothetical preferences. If the choices are perceived as hypothetical, firms may exhibit indifference, fail to reveal clear preferences, or adjust their answer to the perceived goal of the study, all of which potentially compromise the causal interpretation of their decisions (Diamond and Hausman, 1994). However, experimental evidence indicates that responses to hypothetical applicant profiles do not significantly differ from those based on real vacancies (Gutflisch et al., 2021). We further address this issue by designing applicant profiles that mirror the real pool of potential candidates and anchoring the experiment in existing policies aimed at refugee labor-market inclusion. This design choice ensures that participants engage with realistic and policy-relevant scenarios that reflect the type of decisions they routinely face. Section 3.3 presents further details on these aspects.

*occupation you have just specified. [...] For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.*

We implemented three different but related versions of the DCE to which respondents were randomly assigned with equal probability (see Figure 1). In the first, respondents had to choose between a refugee and a German candidate. This design aims to identify systematic differences in the willingness to hire refugees and natives and to explore factors that help refugees overcome these disadvantages.

The second version featured a comparison between two refugee candidates. The direct matchup helps us assess the robustness of our findings on the importance of soft skills with respect to two possible concerns: On the one hand, it rules out the possibility that a native applicant would always be preferred over a refugee candidate (or vice versa in case of social desirability concerns). On the other hand, it creates a situation in which respondents compare like with like and thus ensures a more robust analysis of the relative impact of the characteristics of refugee candidates on their chances of getting hired.

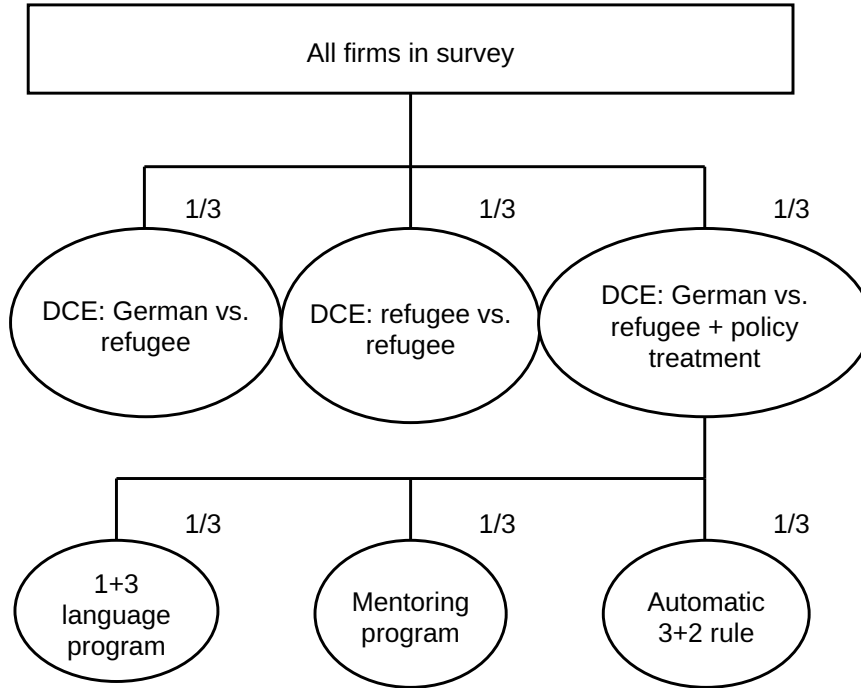
In the third version, we used the same refugee-native comparison as in version 1, but augmented it with an information treatment. Specifically, we randomly assigned the respondents in this leg to three subgroups. In each of them, participants received information on one of three policies designed to foster refugee integration and should make their decision as if this policy was in effect. The policies included (1) a one-year extension of the apprenticeship with a mandatory job-specific German language course in the additional first year to prepare the applicant for the requirements of the vocational training (“1+3 language program”), (2) an external mentoring program during vocational training (“mentoring program”), and (3) an automatic residence and work permit for the time of the apprenticeship and two years after its successful completion (“automatic 3+2 rule”).<sup>8</sup>

Regarding the internal validity of this design, we show in Appendix Tables A.4 to A.6 that the random assignment of participants to the different versions of the DCE was successful across a large number of company, applicant profile, and respondent characteristics. More specifically, we compared the mean of each experimental group with the combined average of the other groups in two-sided t-tests for 97 variables. Of the resulting 462 tests, only 17 reject at the 10% level (3.7%) and 3 at the 5% level (0.6%)

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<sup>8</sup> Appendix Table A.3 presents further details about the way these policies were introduced and explained to the respondents.

**Figure 1:** Structure of the discrete-choice experiment and randomization scheme



**Notes:** We randomly sorted each survey participant into one of the three versions of the DCE (German-refugee, refugee-refugee, German-refugee with policy treatment) with equal probability. Likewise, it randomly assigned one of the three support policies (“1+3 language program”, “mentoring program”, “automatic 3+2 rule”) to the respondents in the policy treatment condition.

— fewer than the roughly 46 and 23 rejections that random assignment alone would be expected to produce. We are therefore confident that the experimental setup created very similar comparison groups with respect to both observable and unobservable characteristics.

### 3.3 The refugee candidates

To obtain a high level of engagement from the survey participants, we designed the profiles of the refugee candidates such that they resembled the real population of refugee applicants in many ways. For this purpose, we selected candidate attributes and their respective values based on the BA/BIBB Study of Refugee Migration (*BA/BIBB Fluchtmigrationsstudie*), a representative survey of refugees based on administrative data in Germany who had been registered as seeking vocational training in a certain year.<sup>9</sup> This dataset provides benchmark values for key socio-demographic characteristics, such as refugee applicants’ age, gender, and legal status, as well as for relevant hard skills like

<sup>9</sup> In 2018, the total number of such individuals was 33, 262, from which a representative sample of 5, 581 persons was interviewed for the survey.

formal education and German language proficiency. In addition, it offers detailed insights into refugees' social integration efforts and internship participation, which allows us to empirically calibrate the respective signals of soft skills selected for the experiment.

Table 1 presents the attributes we use in our experiment, the values they can take for the refugee applicants, and the share of applicant profiles in the experiment presenting each value (column "Share experiment"). For comparison, Table 1 additionally reports the respective information from the BA/BIBB study in column "Share BA/BIBB". In some cases, we deliberately deviated from the characteristics of the real applicant cohort to ensure sufficient variation for statistical identification. This approach allows us to examine firms' responses to a diverse set of applicant characteristics and to maintain a realistic and policy-relevant applicant pool. In the following, we describe the choice of attributes in more detail, distinguishing between socio-demographic characteristics, hard skills, and signals for soft skills. Appendix Figure A.1 shows an example of how these profiles appeared to the respondents in the survey.

**Sociodemographic characteristics.** Our candidate profiles include information on age, gender, country of origin, and legal status. For the refugee applicants, we opted for an equal representation of candidates aged 19 to 27, acknowledging that refugee applicants tend to be significantly older than their German counterparts (Damir-Geilsdorf and Sabra, 2018). Similarly, we chose a 2:1 representation of male and female applicants to reflect the higher share of men in the refugee population at the time and their closer attachment to the labor market. Regarding the country of origin, we selected candidates from Syria and Nigeria, representing two major refugee groups from different cultural backgrounds. Additionally, we included information on legal status, either a tolerance permit that allows to live and work in Germany but needs to be renewed in short intervals or accepted asylum with the attached unrestricted residence permission. The status is likely to play a crucial role in hiring decisions and influences refugees' prospects of staying in the host country and their incentives to invest in host country-specific human capital (Adda et al., 2022; Damelang and Kosyakova, 2021).

**Hard skills.** We use education and language proficiency as the probably most important hard skills in the context of labor market integration of refugees (Dustmann and Fabbri, 2003; Schneeweis, 2011; Foged et al., 2024b). We categorize the education of refugee candidates by four equally represented levels that cover the large majority of backgrounds for refugee applicants to an apprenticeship: (1) a lower secondary school degree obtained abroad, (2) a secondary school degree obtained abroad, (3) a secondary school degree earned in Germany, and (4) a tertiary degree obtained abroad. In turn, we distinguish between two language proficiency levels: intermediate (B1), which is

**Table 1:** Characteristics of refugee applicants: experiment vs. administrative data (in %)

| Attribute                       | Value                  | Share<br>experiment | Share<br>BA/BIBB |
|---------------------------------|------------------------|---------------------|------------------|
| <b>Socio-demographics:</b>      |                        |                     |                  |
| Age                             | 18 or younger          | -                   | 13               |
|                                 | 19                     | 11                  | 12               |
|                                 | 20                     | 11                  | 9                |
|                                 | 21                     | 11                  | 9                |
|                                 | 22                     | 11                  | 7                |
|                                 | 23                     | 11                  | 6                |
|                                 | 24                     | 11                  | 6                |
|                                 | 25                     | 11                  | 6                |
|                                 | 26                     | 11                  | 4                |
|                                 | 27                     | 11                  | 4                |
| Gender                          | Male                   | 67                  | 85               |
|                                 | Female                 | 33                  | 15               |
| Place of birth                  | Syria                  | 50                  | 37               |
|                                 | Nigeria                | 50                  | 7                |
| Legal status                    | Asylum                 | 50                  | 72               |
|                                 | Tolerance permit       | 50                  | 28               |
| <b>Hard skills:</b>             |                        |                     |                  |
| Formal education                | Lower secondary abroad | 25                  | 17               |
|                                 | Secondary abroad       | 25                  | 9                |
|                                 | Secondary Germany      | 25                  | 16               |
|                                 | Tertiary abroad        | 25                  | 31               |
| German proficiency              | B1                     | 50                  | 38               |
|                                 | B2                     | 50                  | 30               |
| <b>Signals for soft skills:</b> |                        |                     |                  |
| Absences                        | 10 % Absences          | 33                  | 33               |
|                                 | 20 % Absences          | 33                  | -                |
| Other signals                   | Internship             | 33                  | 48               |
|                                 | Sports club            | 33                  | 29               |

**Notes:** Column “Share experiment” reports the distribution of attributes in our experimental applicant pool, column “Share BA/BIBB” the corresponding distribution in the BA/BIBB Fluchtmigrationsstudie (own calculations). Percentages are calculated row-wise. In the BA/BIBB column, “Nigeria” aggregates respondents from Nigeria, Eritrea, Somalia, and Gambia due to sample-size constraints. “Legal status” reflects official classifications of refugee residence titles. “Absences” captures incomplete integration courses or missing certifications. “Sports club” indicates the share of refugees that participate in social events and shared activities among others, including Germans “sometimes” or “often”.

typically required as minimum for an apprenticeship and the level participants of an integration course are supposed to have after its completion (BAMF, 2024), and advanced (B2), which signals the ability for spontaneous and fluent conversation on a wide range of topics.

**Signals for soft skills.** We use three signals of soft skills that can be included in apprenticeship applications: absenteeism during previous education episodes, prior internships, and membership in a sports club. Absenteeism is a strong indicator of discipline and reliability and is linked to weaker educational performance and poorer labor market

outcomes (Jackson, 2018; Gottfried and Kirksey, 2017). Accordingly, information about absenteeism at previous educational institutions can help reduce employers' uncertainty about refugee candidates. In Germany, this information is often observable to employers via school-issued certificates that can include these details. We measure absences using two indicators that capture whether the applicant had recorded absences of 10 percent or 20 percent from their educational institution, typically an integration course or public school. The omitted category is no recorded absences. Prior successful participation in an internship serves as another strong signal for commitment, diligence, and motivation (Baert and Vujić, 2016; Ambrosini and Artero, 2023; Kübler et al., 2019). Accordingly, we included completion of an internship in the relevant occupation as an additional soft skill signal. Finally, we used information about membership in a local sports club as a signal for social integration. Lange et al. (2017) show that social integration is a key barrier to the labor market entry of refugees, a finding mirrored by 60% of firm representatives in our sample indicating cultural and social integration as a major challenge for the training of refugees.

### 3.4 The German counterparts

In general, the German applicants for an apprenticeship in versions 1 and 3 of the DCE appear to the respondents in the same way as the refugee applicants, that is, with the same eight attributes and the same values and composition for gender and the signals for soft skills (absences, internships, and membership in a sports club).<sup>10</sup> However, they differ systematically from the refugee applicants in three ways:

First, all German applicants have predetermined values with respect to country of birth (Germany), legal status (German citizenship), and German language proficiency (mother tongue) that structurally distinguish them from the refugee candidates, but keep their profiles realistic. Also, we set the age of German applicants to 17 or 18 years, as they usually start the apprenticeship at this age (BIBB, 2019) and are thus younger than their refugee counterparts. Second, we intentionally set the level of formal education for all German candidates to a lower secondary school degree obtained in Germany. This is rather low and just fulfills the minimum compulsory educational attainment for vocational training. With this choice, we aimed to prevent the German candidate from having a too large *a priori* advantage in terms of educational qualifications, given that foreign degrees are often difficult to assess and introduce uncertainty for employers. Despite this restriction, the resulting choice situation is still a very typical one, as lower secondary school degrees are among the most commonly encountered school credentials

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<sup>10</sup> Appendix Table A.7 reports the full table of attributes across refugee and German applicants in the experiment.

in employers' daily experience (BIBB, 2019). Third, we limited the set of possible combinations of values for refugee and German candidates so that the German applicants did not show the same signals for soft skills as the refugee applicants in any choice situation. This way, we slightly increased the variation between the profiles in each decision situation and thus ensured that respondents could always choose between reasonably different options.

Given these restrictions on the profiles of German candidates, our design represents a discrete-choice experiment with constrained randomization. On the one hand, restricting the randomization mechanism leads to more realistic inference, as it prevents the appearance of largely hypothetical profiles like natives with only temporary residence permission and limited language proficiency or refugees with German citizenship and German as their mother tongue. On the other hand, we have to keep this constellation in mind when interpreting the results of the DCE. In particular, focusing on lower than average German candidates means that the average hiring probability of refugee applicants is likely lower in reality than what we observe in our study. Similarly, always showing different signals for soft skills across the two profiles may have artificially redirected some attention away from the demographic factors of the candidates. Both features therefore attenuate rather than inflate the penalty we estimate, and the refugee coefficients reported below are best understood as a lower bound on the disadvantage refugee applicants face in practice.

### 3.5 Policies to foster refugee integration

In version 3 of the DCE, we use information treatments to assess the effectiveness of various integration policies. This approach allows us to evaluate several measures that exist in limited pilot projects but could potentially compare favorably with some of the large-scale interventions that are currently in use.<sup>11</sup> We focus on the following three measures:

1. *Extension and job-specific language training ("1 + 3 language program")*: This policy adds a preparatory year for refugees at the beginning of the apprenticeship, in which they spend two days per week working in the company and three days in a job-specific language training organized by the local Chamber of Industry and Commerce. Unlike fully government-funded programs, participating firms pay

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<sup>11</sup> Numerous integration programs have been implemented to increase labor market participation of refugees in Germany. Examples are Perspectives for refugees (PerF), Perspectives for young refugees (PerjuF), Perspectives for young refugees in the skilled trades (PerjuF-H), Perspectives for female refugees (PerF-W), KompAS (skills assessment, early activation and language acquisition), Kommit (cooperation model with vocationally compatible further training) and KomBer (combination of job-related language support). For a review of the limited success of these programs, see Rinne et al. (2025).

refugee apprentices the standard first-year apprenticeship wage already in the preparatory year. The policy has been well received by firms and has started to expand to other local employment agencies.

2. *Mentoring program*: This policy pairs refugees with an external mentor who provides guidance throughout the apprenticeship, helping them navigate administrative, cultural, and social challenges. Several publicly funded mentoring programs exist, such as *Verhinderung von Ausbildungsabbrüchen (VerA)* or *Assistierte Ausbildung (AsA)*. They are free of charge for both refugees and employers. However, awareness of such support among firms remains low. For instance, only 7% of training-eligible establishments reported being aware of the AsA program in the 2023 IAB Establishment Panel (Leber and Schwengler, 2025).
3. *Automatic apprenticeship toleration ("Automatic 3+2 rule")*: Implemented in 2016, the "3+2 rule" allows asylum seekers and tolerated persons to remain in Germany for the duration of their vocational training and, after successful completion, for an additional two years of qualified employment. The policy is intended to reduce uncertainty for both employers and apprentices. However, protection is not automatic: applicants must obtain the vocational-training toleration from their local foreigners' office, and previous assessments document restrictive eligibility requirements and substantial variation in local implementation (OECD, 2017; Brücker et al., 2019). Accordingly, coverage remains limited; in May 2021, only around 8,000 individuals held a vocational-training toleration (Koch et al., 2023). We therefore evaluate a simplified version of the policy that provides greater legal certainty: an automatic five-year residence permit starting at the beginning of the apprenticeship.

To enhance the salience of these policies, we prominently displayed a short reminder in a box at the top of the decision screen.<sup>12</sup>

### 3.6 Empirical framework

In the analyses, we use the *Average Marginal Component Effect (AMCE)* as our primary measure of the causal impact of the examined attributes. The AMCE captures the change in the probability that a profile is selected when a specific attribute changes from one level to another, averaging over the distribution of all other attributes (Hainmueller et al., 2014). This approach allows us to estimate the effect of each candidate attribute without imposing strong assumptions about interactions among attributes in firm decision-making.

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<sup>12</sup> Figure A.2 in the appendix demonstrates how the screen looked like for the respondents in these cases.

The AMCE can be consistently estimated when we use the coefficient from a linear probability model (LPM) because the candidate attributes are conditionally independently randomized and the outcome variable is binary. An LPM directly yields the mean difference between groups when the binary outcome is regressed on attribute indicators. We therefore adopt the following specification as our main model:

$$\begin{aligned}
y_{ijk} = & \alpha_0 + \alpha_1 \text{Female}_{ijk} + \alpha_2 \text{Age}_{ijk} + \alpha_3 \text{Legal Status}_{ijk} \\
& + \delta' \text{Education}_{ijk} + \alpha_4 \text{Language}_{ijk} \\
& + \gamma' \text{Signals}_{ijk} + \rho' \text{Absences}_{ijk} \\
& + \gamma^{Ger'} \text{Signals}_{ijk}^{Ger} + \rho^{Ger'} \text{Absences}_{ijk}^{Ger} \\
& + \theta' \text{Controls}_{ijk} + u_{ijk}
\end{aligned} \tag{1}$$

where  $y_{ijk}$  is a binary indicator if the refugee with candidate profile  $j$  presented in evaluation round  $k$  gets chosen by firm  $i$ , where the candidate's attributes vary across  $j$  and  $k$  indexes repeated profile evaluations within the same firm. Variables in bold letters represent vectors of indicator variables for categorical variables (like *Education*) or different values for an experimentally manipulated dimension (like *Signals*).<sup>13</sup> We rely on LPMs for our main analyses throughout the paper and report results from a mixed logit framework based on an indirect linear utility function as a robustness check in Appendix Section B, to demonstrate that our findings are not an artifact of the linear functional form.

Lastly, note that our DCE design constrained the paired profiles with respect to the soft-skill signals, that is, the German applicant never displayed the same values for absences, internships, and sports club membership as the refugee applicant. The AMCEs for these attributes therefore depict the average causal effect of changing an attribute level conditional on the competing profile taking a different level of the same attribute. By contrast, the other attributes (demographic characteristics, legal status, education, and language proficiency) were randomized without this restriction and carry the standard interpretation.

## 4 Results

We begin the presentation of the results by comparing the hiring probabilities of refugee and German applicants overall and by type of refugee. In a second step, we examine the

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<sup>13</sup> Controls always include the age and the gender of the German comparison. We then progressively add location FE, firm controls (size of the firm and whether they have experience with workers from non-EU countries) and then firm FE.

influence of formal qualifications, soft skill signals, and the effects of targeted policies on the likelihood of being hired. In Section 5, we then discuss the validity and robustness of the results, including intra-refugee comparisons and the analysis of ratings instead of choices as outcome variable. Section 6 examines heterogeneity across subsamples, including local labor market conditions and firms' prior exposure to migrants.

## 4.1 Average probability of hiring

Of the 1,023 companies participating in the survey, 797 answered the discrete choice questions. With five choice situations each and two profiles per choice situation, we end up with information on stated employer preferences for 3,840 applicant comparisons including a total of 7,680 individual profiles.<sup>14</sup> In our baseline scenario (version 1), employers selected the refugee candidate in 39% of cases on average, that is, significantly less often than their German counterparts (61%).<sup>15</sup> This low success rate suggests systematic problems or disadvantages for refugee candidates on the apprenticeship market.

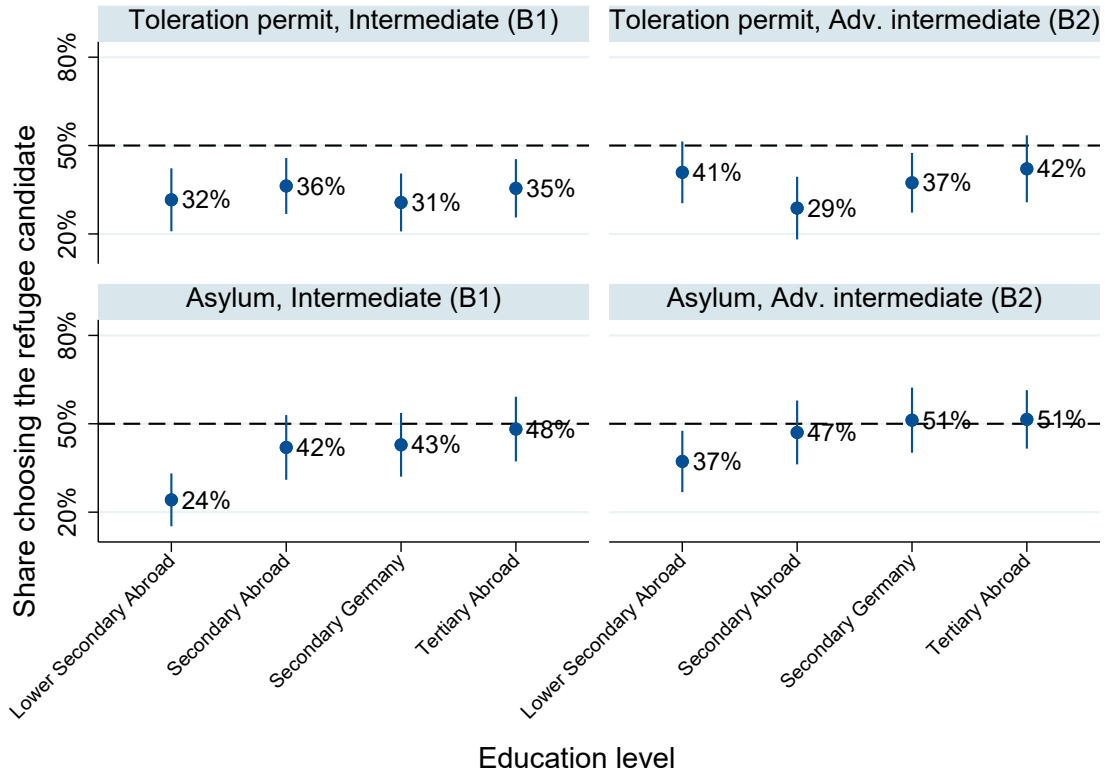
To assess where this disadvantage may come from, we look at the average hiring probability of refugee applicants by education level, legal status, and language proficiency (see Figure 2). The horizontal line at the 50% probability level represents equal chances on average for both groups of applicants, point estimates below (above) the line depict a hiring disadvantage (advantage) for refugee candidates compared to natives.

Overall, the results show a rather challenging situation for refugees on the apprenticeship market. Even competing against German applicants with only the lowest educational degree, we observe negative and statistically significant differences to the equal-opportunity situation for 8 out of the 16 combinations of characteristics. At the same time, not a single constellation leads to a significant positive difference. Regarding the individual factors, education, language proficiency, and legal status all seem to play a moderately positive role for the hiring chances of refugees. For each of these attributes, refugee applicants in the stronger category face smaller gaps in the average probability of being selected than those in the weaker category. Nevertheless, even if refugee candidates have an accepted asylum status, speak German fluently, and possess a tertiary degree from their home country, their likelihood of being selected still does not exceed that of low-educated German applicants in a meaningful way (see the lower right panel in Figure 2). The results thus indicate some reluctance among employers to hire refugees for apprenticeships that could be due to uncertainty about the quality of educational qualifications from abroad and the risk of dropouts or failures caused by

<sup>14</sup> 29 firm representatives did not complete all five choice tasks, which reduces the number of observations slightly.

<sup>15</sup> See Appendix Table A.8 for an overview of selection rates and rating scores across the different questionnaire versions.

**Figure 2:** Average refugee DCE selection probability by observable characteristics



**Notes:** The figure plots the average probability of refugee applicants to be selected in the discrete-choice experiment as a function of their legal status, German language skills, and level of education. The dashed horizontal line at 50% marks the point of indifference between the refugee and the German comparison candidate. The German applicant always has a lower secondary degree from a German school. Whiskers show the 95% confidence intervals.  $N = 1380$  decisions by 276 employers.

language difficulties or other flight-related legal or personal issues.

## 4.2 The role of formal and informal qualifications

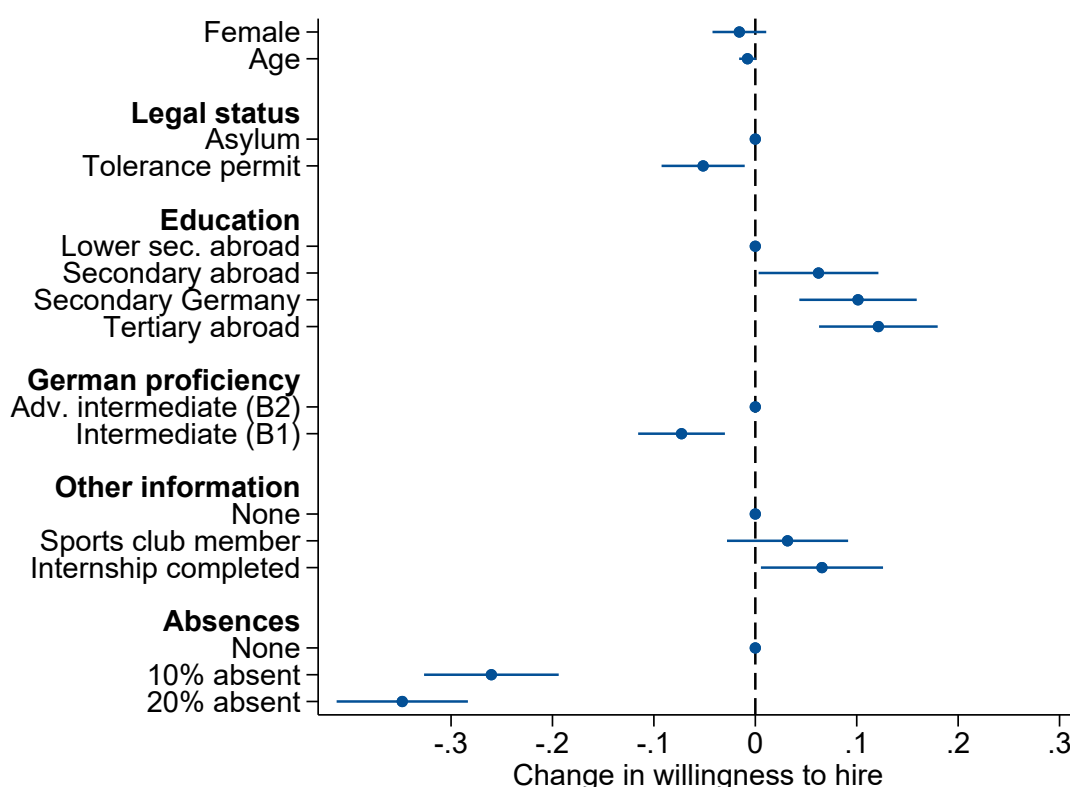
Next, we look at the role of the individual attributes in more detail. To this end, Figure 3 reports the average marginal component effect (AMCE) estimates for each individual refugee characteristic, obtained by regressing the probability of being selected in the experiment on all the attribute values used to describe the applicant profiles (see equation 1).<sup>16</sup>

Starting with the demographic characteristics, employers do not appear to respond systematically to applicants' age or gender.<sup>17</sup> In contrast, legal status and all signals of formal qualifications seem to play a significant role in firms' hiring decisions. Thus, a

<sup>16</sup> The complete regression results including several robustness checks are reported in Appendix Table A.9.

<sup>17</sup> Age is a continuous variable ranging from 19 to 27 years. Female is a binary variable, coded 0 for male and 1 for female.

**Figure 3:** The effect of refugee characteristics on the willingness to hire



**Notes:** The figure plots the average marginal component effects (AMCEs) of the respective characteristics of a refugee applicant on the stated willingness of employers to hire them, obtained from an OLS regression (see column 1 of Appendix Table A.9). The baseline probability of being chosen as a refugee is 0.39. The respective baselines are shown with a dot on the zero-line. Age is a continuous variable ranging from 19 to 27 years. Female is a binary variable, coded 0 for male and 1 for female. Whiskers depict the 95% confidence intervals around the dots. N= 1380 decisions by 276 firms.

toleration permit reduces the probability of selection by 5 percentage points relative to a recognized asylum status. Similarly, a secondary degree raises the selection probability by 6 percentage points when obtained abroad and by 10 percentage points when completed in Germany, compared to a lower-secondary degree from abroad. A tertiary degree from the country of origin even increases the probability of selection by 12 percentage points. Finally, speaking German only at the intermediate level (B1) reduces the probability of selection by 7 percentage points relative to the more advanced B2-level proficiency.<sup>18</sup>

Taken together, legal status and formal qualifications are important predictors of firms' stated hiring decisions, demonstrated by a very low p-value in a test of joint significance ( $p < 0.001$ ). Refugee profiles with the weakest combination of these signals are selected 31.6% of the time on average, compared with 51.5% for refugee profiles

<sup>18</sup> The results are robust across alternative specifications, including regional and firm fixed effects, firm-level controls, and mixed-logit estimation; see Appendix Tables A.9 and B.1.

with the strongest credentials.<sup>19</sup> However, these signals of hard skills only account for 5.1% of the total explained variation in the experimental hiring decisions. Most variation in stated hiring decisions thus remains unexplained by these observable qualifications, leaving substantial scope for soft skills and other non-cognitive information to shape firms' evaluations.

The bottom part of Figure 3 reports the results for these other factors. It shows that active membership in a sports club does not significantly affect the hiring probability of refugee applicants, but completion of an internship increases the chances by 7 percentage points. Most importantly, absences from the most recent educational or training institution strongly reduce selection probabilities. Relative to regular attendance, a 10% absenteeism rate lowers the probability of selection by 26 percentage points, and a 20% rate does so even more strongly by 35 percentage points. These results show that employers place substantial weight on signals of engagement and reliability in education or training when evaluating prospective refugee apprentices.

In combination, soft skills turn out to be a more important factor in determining refugee hiring than the combination of legal status and signals of hard skills. On the one hand, the spread in predicted employability across the soft skill distribution is substantial: a refugee candidate with the weakest soft skill profile (no extracurricular activity and a record of 20% absences) is hired only 10.4% of the time on average, whereas an otherwise identical candidate with the strongest soft skill profile (a completed internship and no absences) faces a hiring probability of 75.0%, implying a gap of over 60 percentage points.<sup>20</sup> On the other hand, soft skills account for 20.7% of the total explained variation in hiring outcomes (increase in  $R^2 = 0.07$ ,  $p < 0.001$ ), substantially more than the share attributable to hard skills and legal status (increase in  $R^2 = 0.017$ ,  $p < 0.001$ ). Taken together, these results suggest that firms place considerable weight on signals of reliability and social integration when evaluating refugee applicants, and that the penalty for appearing unreliable is larger than the reward for stronger formal credentials.

Finally, we examine whether the returns to soft-skill signals differ between refugee and low-skill German applicants. This could be the case, for instance, if employers rely more strongly on these signals for refugee candidates because they find it harder to properly assess the quality of the latter's formal degrees. To test this formally, we use the estimated coefficients for the soft skills of both refugee and German applicants from our main specification. As stronger soft skills of the German competitors lower the probability of hiring a refugee candidate (our dependent variable), the coefficients for each type of soft skill should show opposite signs. Equality of the two returns therefore cor-

<sup>19</sup> See column (1) of Appendix Table A.10.

<sup>20</sup> See Panel B column (2) of Appendix Table A.10.

responds to the symmetry hypothesis  $H_0 : \beta_{\text{refugee}} + \beta_{\text{German}} = 0$  for each soft skill in our experiment.

Appendix Table A.11 reports the the  $F$ -statistic and  $p$ -value of a Wald test of each of these restrictions. Most returns are not statistically different for refugee and German applicants (completed internship, being active in a sports club, and having a high absenteeism rate of 20%). The employers' response only differs with respect to an absence rate of 10%, for which they react more negatively for refugee candidates ( $p = 0.043$ ). This difference in reactions also remains when we add regional and firm controls ( $p = 0.010$ ).<sup>21</sup> Overall, this pattern could mean that positive signals get equal attention among firm representatives, but there is a slightly greater tendency to tolerate moderately negative signals for German than for refugee applicants.

### 4.3 Targeted policies

Aside from signaling strong soft skills, hiring disadvantages for refugee applicants may also be mitigated by policies that directly aim to address certain challenges to their labor market integration. Whether such policies are successful, however, likely depends on whether firms perceive them as effective in reducing the costs of training refugees and increasing the chances for a successful completion of the apprenticeship. We therefore assess the stated willingness of firm representatives to hire refugee apprentices under the three policy scenarios described in Section 3.5: (i) an additional first year of training focused on job-specific language acquisition ("1+3 language program"), (ii) an external mentoring program ("mentoring program"), and (iii) a five-year right to remain and work in Germany upon signing the apprenticeship contract ("automatic 3+2 rule").

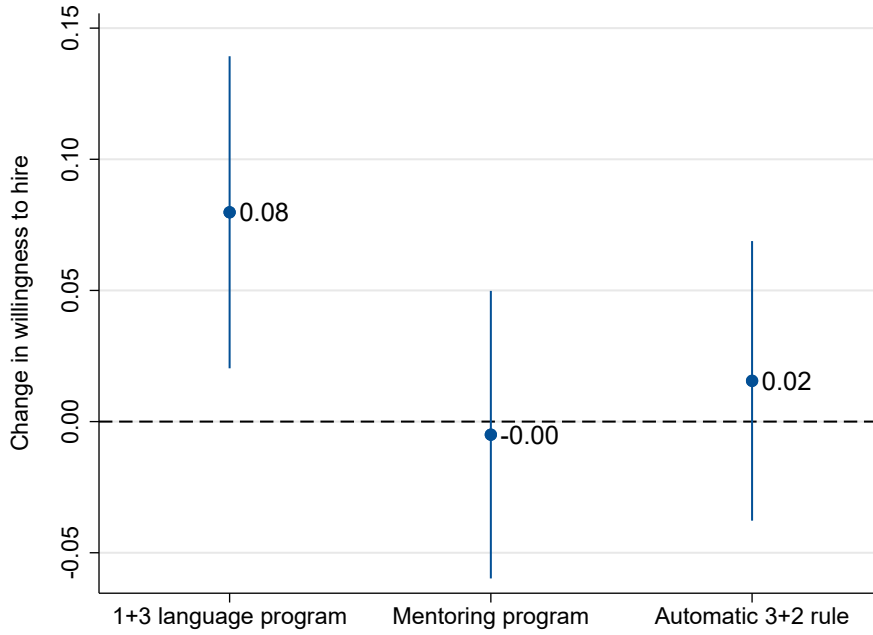
To identify the impact of these interventions, we exploit versions 1 and 3 of our experiment. In both versions, firm representatives choose between a German and a refugee applicant. In version 1, the respondents most likely implicitly believed that they shall do so in the real context. By contrast, participants in version 3 were randomly assigned to one of the three policies described above and instructed to assume that the refugee applicant receives support from that measure. We estimate the effect of each policy by comparing the probability that the refugee applicant is chosen between that condition and the baseline without support policy, averaging across applicant profiles.

Figure 4 illustrates the resulting effects by policy measure.<sup>22</sup> The estimates show that only one of the three interventions seems to fulfill its goal. Requiring refugees and companies to include an additional year of job-specific language training increases the average likelihood of being hired for an apprenticeship by 8 percentage points, a re-

<sup>21</sup> See Appendix Figure A.3 for a visual representation.

<sup>22</sup> Appendix Table A.12 reports the full results for regressions with and without regional and firm fixed effects.

**Figure 4:** Effect of policies on the average willingness to hire a refugee



**Notes:** This figure represents the magnitude of the policy effects (in percentage points) in an OLS regression, the solid lines depict the 95% confidence intervals from Appendix Table A.12 Column 3. The *1+3 language program* comprises an additional year that precedes the regular vocational training and has a strong focus on the acquisition of job specific language skills. In the *mentoring program*, external mentors are supposed to help trainees and their firms overcome bureaucratic, social or cultural obstacles. The *automatic 3+2 rule* grants a residence permit for at least 5 years after starting the apprenticeship training without the need to apply for it. N= 2,595 decisions by 519 firms.

sult that remains robust across all model specifications. This finding highlights a gap in current integration policies, which have largely failed to provide refugees adequate opportunities to acquire the language skills necessary for the actual job (Brell et al., 2020). Expanding access to integrated programs that combine vocational and language training could thus substantially improve the employment prospects of refugees. By contrast, we do not find any significant change in the probability of hiring refugee applicants for the mentoring program and the automatic 3+2 rule. This suggests that employers may not perceive external mentoring as very helpful and that they believe the risk of refugee apprentices being expelled is small.

## 5 Validity and robustness

### 5.1 Stability across choice situations and profile order

We perform a series of additional tests to check the validity and robustness of our main results. To start, we examine the assumptions of (i) *stability and no carryover effects* and (ii) *no profile-order effects*. Together, they posit that, for AMCEs to have a consistent inter-

pretation, respondents' evaluations must not depend systematically on where a choice task appears in the sequence or on whether a profile is shown first or second. We therefore examine whether these conditions are fulfilled by testing whether the AMCEs differ across choice tasks or profile positions.

More specifically, for the test of stability, we regress the binary choice outcome on the applicant characteristics, indicators for the position of the choice situation in the sequence, and the interactions between the two, pooling all versions of the DCE. We then conduct  $F$ -tests of the joint significance of the interaction terms. The test of profile-order effects follows the same approach, replacing the indicators for the choice situations with an indicator for profile position and its interactions with the applicant characteristics.

Of the 18 attribute-specific tests (nine for each assumption), only two reject the null of equal AMCEs at the 5% level: having completed tertiary education abroad in the test for stability and no carryover effects ( $p = 0.01$ ) and reporting a 20% absence rate in the test for profile-order effects ( $p = 0.03$ ).<sup>23</sup> All the other estimated effects therefore seem to be similar across tasks and profile positions. These results suggest that carryover and profile-order effects are limited and that both assumptions are largely satisfied.

## 5.2 Sample and design features

In the next step, we look at the robustness of our results with respect to certain sample and design features. We consider four changes to our setup: (a) Excluding participants who answered the experimental questions very quickly, (b) reweighting the sample to be more similar to the real population of apprenticeship firms, (c) evaluating a refugee-refugee comparison with fully varying profiles on both sides (version 2 of the experiment), and (d) replacing the forced-choice outcome variable and redoing our analysis with the information from the respondents' ratings for each individual applicant profile.

Table 2 reports the results of these tests, with the estimates of the main specification as baseline in column (1). We start by excluding respondents from the sample who may not have answered the questionnaire with the appropriate diligence. Respondents spent on average 50 seconds on the screen containing the choice task and the two employability ratings, suggesting that they engaged with the profiles rather than responding at random. We nonetheless drop all respondents who took fewer than ten seconds to complete the binary choice and both ratings in at least one decision situation. This affects 30 of the 1,380 choice situations. The results in column (2) show that the estimates without fast responders do not differ much from those for all participants. That is, both size and significance of the AMCE values remain the same.

Second, we test whether our results are driven by selective participation in our survey

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<sup>23</sup> Appendix Table A.13 reports the full results for both sets of tests.

**Table 2:** Robustness checks

|                                           | (1)                  | (2)                  | (3)                  | (4)                   | (5)                  |
|-------------------------------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
|                                           | Main results         | Without speedsters   | Weighted results     | Refugees vs. refugees | Rating as DV         |
| <b>Socio-demographic characteristics:</b> |                      |                      |                      |                       |                      |
| Female                                    | -0.016<br>(0.013)    | -0.015<br>(0.013)    | -0.011<br>(0.016)    | 0.005<br>(0.011)      | -0.122*<br>(0.066)   |
| Age                                       | -0.008*<br>(0.004)   | -0.008**<br>(0.004)  | -0.007<br>(0.005)    | -0.001<br>(0.003)     | -0.015<br>(0.009)    |
| Tolerance permit                          | -0.051**<br>(0.021)  | -0.052**<br>(0.021)  | -0.064***<br>(0.023) | -0.112***<br>(0.023)  | -0.141***<br>(0.045) |
| <b>Hard skills:</b>                       |                      |                      |                      |                       |                      |
| Secondary abroad                          | 0.062**<br>(0.030)   | 0.071**<br>(0.030)   | 0.046<br>(0.036)     | 0.030<br>(0.028)      | 0.115*<br>(0.062)    |
| Secondary Germany                         | 0.101***<br>(0.029)  | 0.102***<br>(0.029)  | 0.096***<br>(0.035)  | 0.100***<br>(0.029)   | 0.204***<br>(0.065)  |
| Tertiary abroad                           | 0.121***<br>(0.030)  | 0.122***<br>(0.030)  | 0.130***<br>(0.035)  | 0.069**<br>(0.029)    | 0.251***<br>(0.066)  |
| B1 German                                 | -0.073***<br>(0.022) | -0.085***<br>(0.021) | -0.058**<br>(0.025)  | -0.170***<br>(0.024)  | -0.139***<br>(0.046) |
| <b>Signals for soft skills:</b>           |                      |                      |                      |                       |                      |
| Sports club                               | 0.032<br>(0.030)     | 0.030<br>(0.031)     | 0.030<br>(0.035)     | 0.044*<br>(0.024)     | 0.080<br>(0.058)     |
| Internship                                | 0.066**<br>(0.031)   | 0.064**<br>(0.031)   | 0.055*<br>(0.033)    | 0.091***<br>(0.023)   | 0.063<br>(0.067)     |
| 10% absent                                | -0.260***<br>(0.034) | -0.263***<br>(0.034) | -0.234***<br>(0.039) | -0.280***<br>(0.024)  | -0.436***<br>(0.062) |
| 20% absent                                | -0.348***<br>(0.033) | -0.360***<br>(0.033) | -0.332***<br>(0.037) | -0.514***<br>(0.026)  | -0.652***<br>(0.067) |
| <b>German comparison profile:</b>         |                      |                      |                      |                       |                      |
| Sports club                               | -0.020<br>(0.032)    | -0.025<br>(0.032)    | -0.031<br>(0.038)    |                       | -0.062<br>(0.070)    |
| Internship                                | -0.042<br>(0.031)    | -0.045<br>(0.031)    | -0.055<br>(0.036)    |                       | -0.071<br>(0.067)    |
| 10% absent                                | 0.144***<br>(0.030)  | 0.143***<br>(0.030)  | 0.145***<br>(0.035)  |                       | 0.036<br>(0.062)     |
| 20% absent                                | 0.419***<br>(0.030)  | 0.423***<br>(0.030)  | 0.416***<br>(0.034)  |                       | 0.302***<br>(0.062)  |
| Constant                                  | 0.446***<br>(0.064)  | 0.466***<br>(0.064)  | 0.439***<br>(0.077)  | 0.788***<br>(0.036)   | 3.502***<br>(0.176)  |
| Sample                                    | v1                   | v1                   | v1                   | v2                    | v1                   |
| N                                         | 1380                 | 1350                 | 1380                 | 2780                  | 1311                 |
| Adj. R-sq.                                | 0.330                | 0.343                | 0.315                | 0.228                 | 0.127                |

**Notes:** OLS coefficients. The dependent variable equals one if the refugee applicant is hired in columns (1)–(4); column (5) uses the respondent's 5-point hiring-likelihood rating (1 = very unlikely to 5 = very likely). Column (1) is the main specification; (2) excludes speedsters, i.e. respondents who spent less than 10 seconds on at least one discrete-choice task; (3) weights observations by the administrative composition of firms offering apprenticeships in the respective IHK/HWK district; (4) is the refugee-vs-refugee comparison (the specification also controls for completion of a lower-secondary degree in Germany.); (5) replaces the binary choice with the ratings of the individual profiles (for which there are some missings). The omitted baseline category is held constant across all columns. For the migrant applicant it is: male, asylum accepted, lower secondary education abroad, German proficiency B2, no additional information, and no absences. For the German comparison profile in columns (1)–(3) and (5), the omitted baseline category is: male, no additional information, no absences, and age 17. Lower secondary education Germany appears as a separate category only in the refugee-vs-refugee comparison (column 4), where both applicants are refugees. Clustered standard errors at the respondent level are reported in parentheses.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

with respect to the size of companies and their regional distribution (see Section 3.1). To account for these aspects, we re-estimated our main regression using weights based on firm size and chamber affiliation that we derived from administrative data covering the entire population of companies in the respective region engaged in apprenticeship training. Column (3) shows that the weighted results are nearly identical to the unweighted estimates, which suggests that our main findings are not sensitive with respect to these characteristics.

Third, we examine whether the comparison between a refugee and a German applicant in our main setting (version 1) leads to substantially different conclusions than a more classical *paired DCE design*. To this end, we implemented the latter by letting participants choose between two refugee candidates with profiles drawn from the same set of potential attribute values (version 2 of the experiment).<sup>24</sup> This setting is arguably less realistic than the refugee–German comparison, but it allows for a clean apples-to-apples comparison among the refugee candidates and thus provides a relevant complement to our main analysis.

Column (4) shows that the inter-refugee comparison preserves the sign and significance of all key signals, even though several magnitudes differ: the penalties for a tolerance permit (0.112 vs. 0.051), B1 proficiency (0.170 vs. 0.073), and a 20% absence rate (0.514 vs. 0.348) are larger, while the returns to a tertiary (0.069 vs. 0.121) and secondary degree obtained abroad (0.030 and insignificant vs. 0.062) are smaller. This is consistent with respondents weighing refugee-specific attributes more sharply when both candidates are refugees rather than seeing only one refugee candidate and comparing them with a fixed low-education German native. The estimates also confirm our main conclusion, i.e., that soft-skill signals, especially absences, play an important role in the decision to hire refugee applicants for an apprenticeship.<sup>25</sup>

Finally, we assess whether the forced-choice design affects our results, as respondents have to select one of the two candidates even if they would not hire either in practice. To address this concern, we re-estimate the main specification using the five-item employability rating for each applicant instead of the binary choice outcome. Column (5) of Table 2 reports the corresponding estimates. They indicate that the rating outcomes closely mirror those from the binary choice: the direction, relative magnitude, and statistical significance of all attributes are preserved. This consistency indicates that the forced-choice design with constrained randomization does not drive our findings

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<sup>24</sup> The only difference is that version 2 includes lower secondary education obtained in Germany as an extra education category for refugee candidates, as this is the level of German applicants in version 1 and would thus be left out.

<sup>25</sup> We also look at the results from version 2 (column 4) in a mixed logit model instead of a linear probability model (see Appendix Table B.2). They are very similar to the estimates in our main regression reported here.

either. We are therefore confident that the results of our main analysis represent real preferences and are not simple artifacts of sample composition, systematic differences between the comparison groups, or the chosen choice setup.

## 6 Subsample analysis

Building on the results of the pre-registered analyses, we further explore variation across labor markets, firm characteristics, and target groups for the support policies. More specifically, we first examine whether firms in tighter labor markets have a higher willingness to hire a refugee for an apprenticeship than those operating in less challenging circumstances. Then, we investigate whether employers with previous experience with non-EU workers and those interested in apprentice training to obtain skilled employees in the long-run show greater openness to train refugees. Finally, we assess potential heterogeneity in the effect of the integration policies, in particular, whether the policy measures have a stronger impact for their respective primary target groups.

### 6.1 Labor market conditions

The willingness of companies to hire refugees for vocational training may depend on how difficult it is to find suitable candidates on the local labor market. On the one hand, in regions with a high number of vacancies relative to job seekers (i.e., tight labor markets), firms may be more inclined to hire refugees to avoid unfilled positions. This argument has featured prominently in public and policy debates, with policymakers and media commentators repeatedly pointing to refugees as an untapped labor reservoir that could help alleviate the existing shortages in the labor market. On the other hand, employers in such areas may be even less likely to select refugees if they believe that the better outside options increase the risk of drop-out during the training or poaching after its completion more strongly for refugees than for German applicants.

To investigate whether employers act differently depending on the state of the regional labor market, we construct a binary indicator of labor market tightness from administrative data provided by the Federal Employment Agency. To this end, we first compute the ratio of unfilled apprenticeship positions to unsuccessful applicants at the level of NUTS3 districts  $\times$  2-digit industries in 2021 (i.e., the year of the survey). A higher ratio indicates a market in which firms face greater difficulty filling their training positions relative to the pool of available candidates. We then define firms as operating in a tight labor market if they are above the median of this ratio and insert this indicator into our main specification.

Column (1) of Table 3 reports the results of this augmented regression specification.

**Table 3:** Subsample analysis

|                                  | Dependent variable: refugee candidate chosen |                                           |                                    |                                |                             |                              |
|----------------------------------|----------------------------------------------|-------------------------------------------|------------------------------------|--------------------------------|-----------------------------|------------------------------|
|                                  | Company characteristics                      |                                           |                                    | Policy interventions           |                             |                              |
|                                  | (1)<br>Labor market<br>tightness             | (2)<br>Experience with<br>non-EU migrants | (3)<br>Investment<br>oriented firm | (4)<br>1+3 language<br>program | (5)<br>Mentoring<br>program | (6)<br>Automatic<br>3+2 rule |
| <b>Company characteristics:</b>  |                                              |                                           |                                    |                                |                             |                              |
| Indicator for subgroup           | -0.050**<br>(0.024)                          | 0.054**<br>(0.022)                        | 0.029<br>(0.021)                   |                                |                             |                              |
| <b>Policy interventions:</b>     |                                              |                                           |                                    |                                |                             |                              |
| Main effect of policy            |                                              |                                           |                                    | 0.082**<br>(0.040)             | -0.048<br>(0.039)           | 0.030<br>(0.037)             |
| B1 proficiency $\times$ policy   |                                              |                                           |                                    | -0.014<br>(0.052)              |                             |                              |
| Low education $\times$ policy    |                                              |                                           |                                    |                                | -0.006<br>(0.052)           |                              |
| Tolerance permit $\times$ policy |                                              |                                           |                                    |                                |                             | -0.036<br>(0.042)            |
| All DCE variables                | YES                                          | YES                                       | YES                                | YES                            | YES                         | YES                          |
| Sample                           | v1 + v3                                      | v1 + v3                                   | v1 + v3                            | v1 + v3.1                      | v1 + v3.2                   | v1 + v3.3                    |
| N                                | 2315                                         | 2315                                      | 2255                               | 1620                           | 1595                        | 1710                         |
| Adj. R-sq.                       | 0.356                                        | 0.355                                     | 0.353                              | 0.344                          | 0.361                       | 0.358                        |

**Notes:** The table reports OLS coefficients; the dependent variable equals one if the refugee candidate is chosen. Columns (1)–(3) split the sample by company characteristics: high labor market tightness (region–sector combinations with a tightness measure above the sample median), prior experience employing a non-EU migrant, and being an investment-oriented firm (for which the benefit of training an apprentice does not exceed its cost during the time of the apprenticeship already). Columns (4)–(6) report, for each policy intervention, its main effect and its interaction with the primary target group. The primary target group is refugees with B1 language proficiency for the 1+3 program, refugees with low educational attainment (lower secondary or secondary education obtained abroad) for the mentoring program, and refugees with only a temporary toleration permit for the automatic 3+2 rule. All regressions include the full set of migrant and German DCE attributes as well as firm controls (regional dummies, number of apprentices, position of the respondent, and hiring responsibility); these are included but not displayed. Columns (1)–(3) pool the no-policy version and all policy versions (v1 + v3); each policy column is restricted to v1 plus the respective policy subversion (v3.1–v3.3), with the intervention coded as a 0/1 indicator. Samples v3.1–v3.3 denote the subversions of the experiment that include the respective policy in the description of the choice tasks. Clustered standard errors at the respondent level in parentheses. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

They indicate a significantly negative correlation between labor market tightness and the willingness of companies to select refugees in the decision task. More specifically, companies operating in regions with tighter labor markets have a 5 percentage points lower willingness to hire refugees than those in regions with a more favorable labor supply situation.

Looking at the employability ratings for each applicant explains some of the mechanics behind this result. As Appendix Table A.14 shows, firms' assessments of refugee applicants is virtually the same in tighter or looser labor markets. By contrast, German applicants receive ratings that are 0.16 points higher on the five-point scale in high-tightness markets. Thus, the differential assessment of German candidates relative to refugee ones is even larger when vacancies are harder to fill. Overall, this pattern sug-

gests that firms facing difficulties to recruit appropriate employees may be more risk averse and thus more inclined to choose a German candidate with less uncertainty about their qualifications, whenever such a candidate is available.

## 6.2 Firm characteristics

Apart from labor market conditions, we also want to know whether certain firm characteristics correlate with the probability to hire a refugee candidate for an apprenticeship. More specifically, we look at companies with different responses to certain questions in our survey: First, whether they currently employ workers that are not from an EU member state or an associated country (like Switzerland or Norway). And second, whether their motivation to invest in apprenticeship training comes from wanting cheap labor for a short period of time or from their interest in acquiring skilled labor for the long-run.

The estimates reported in column (2) of Table 3 show that firms with experience in the employment of non-EU workers, chose refugee applicants at a 5 percentage points higher probability than respondents from companies without the same background. These firms may already be familiar with the bureaucratic processes involved and how to navigate them, leading to lower expected costs of hiring refugees. Alternatively, their culturally more diverse workforce may have fostered greater openness toward hiring refugees, consistent with the argument of the "contact hypothesis" (Allport, 1954; Bursztyn et al., 2024; Achard et al., 2025). By contrast, representatives from investment-oriented firms (i.e., firms that perceive the costs of training to exceed its benefits) appear to be no more likely to employ refugees than those from firms that are mainly interested in obtaining cheap workers for the duration of the apprenticeship (see column (3) of Table 3).

## 6.3 Target groups of support policies

In our discussion of the effect of the three support policies described above, we examined their average impact across all refugee applicant profiles. However, each measure aims to address a different issue for a specific target group. The 1+3 language program with additional occupation-specific language training at the beginning of an apprenticeship is designed to reduce the language problems that many refugee apprentices have to deal with. The external mentoring program shall help refugee apprentices with respect to administrative challenges or educational issues, reducing the companies' responsibility in those areas. Finally, the automatic 3+2 rule targets refugees with insecure formal status in order to remove the legal uncertainty involved in hiring them. This means that we can identify applicant profiles that should theoretically profit the most from

these policies and examine whether the effect of each support measure is greater for the respective target group than for the rest of the profiles. We use refugee applicants with B1 language proficiency as main target group of the 1+3 language program, those with lower educational attainment (lower secondary or secondary education from abroad) for the mentoring program, and those who only possess a temporary toleration for the automatic 3+2 rule.

For the analysis of each policy, we use all observations from version 1 and combine them with those from the respective subsample of version 3 that contains this specific intervention. We then interact the variable for the support policies with a binary indicator for the respective target group. Columns (4) to (6) of Table 3 report the results of this exercise. They show that none of the interaction terms is statistically significant, which means that we do not find substantial heterogeneity in policy effects across refugee subgroups. Interestingly, the support policies therefore do not seem to be more effective for the specific type of refugee they are designed for.

## 7 Conclusion

Vocational training is a critical pathway for refugees into skilled employment, yet uptake remains low despite labor shortages in many sectors and strong interest in apprenticeship programs among refugees. This paper examines the demand side of the German apprenticeship market as a potential bottleneck by conducting a discrete-choice hiring experiment with almost 800 firms. Three key findings emerge: First, refugees face a substantial hiring disadvantage relative to native applicants, which only closes when refugees strongly outperform them in education, achieve high language proficiency, and obtain a secure legal status. Second, credible signals of reliability and integration motivation substantially improve hiring chances for refugees, for instance, completed internships or records of diligent participation in previous educational courses. Third, programs focusing on job-specific language skills significantly raise employer willingness to hire refugees, while external mentoring and automatic toleration permits appear largely ineffective.

These results point to structural barriers rooted in employer uncertainty about productivity, commitment, and dropout risk — concerns that are especially salient in apprenticeship markets, where firms bear sizable upfront training costs. Credible soft-skill signals can reduce these information frictions, as can targeted language training, which stands out as the most effective policy lever. By contrast, broader integration measures show little impact, suggesting that governments should concentrate their efforts on providing content-specific language training as a prerequisite for successful labor market

integration.

Additional exploratory analyses suggest that firms in tight labor markets are even more reluctant to bear any risk, limiting the opportunity that refugees contribute meaningfully to reducing the shortage of skilled workers in these regions or occupations. Firms with prior experience employing non-EU workers, however, display greater openness toward refugee apprentices, consistent with learning effects that reduce risks related to training success and perceived administrative burdens. A more proactive and supporting role of the local bureaucracy could thus prove helpful in decreasing concerns about the additional effort needed to employ refugees.

There are several limitations of this study that need to be considered. First, our sample of firms exclusively originates in South Germany, so that the results may not be the same for other regions of the country. Second, we decided to compare refugees only to relatively low-skilled native applicants in the experiment. In real-world settings, many native applicants possess higher educational qualifications. Because a stronger comparison candidate would widen rather than narrow the observed gap, our estimates are best understood as a lower bound on the disadvantage refugees face in practice. Third, some of the signals for soft skills were probably more salient in the experiment than in typical applications, in particular, the information about absences in previous programs or courses. This could have led to increased estimates for this attribute and lower ones for the other characteristics and signals. Fourth, our findings pertain to refugees and may not generalize to other migrant groups or to second-generation immigrants. Finally, as with all stated-choice experiments without incentives or consequences, our results may be influenced by social desirability concerns or demand effects to some extent, although the consistency of our findings across experimental variations mitigates these concerns.

The findings and limitations of this study point to several promising directions for future research. In particular, scientists and practitioners alike should examine more mechanisms to strengthen refugees' labor market standing already in their design stage to identify promising measures and sort out likely ineffective ones. Examples could be efforts to certify non-formal qualifications gained in the home countries or the size of wage subsidies for training refugees as apprentices. In addition, we encourage researchers to conduct more incentivized experiments or field experiments in real hiring environments to validate the effectiveness of specific support measures. Finally, future studies may focus on occupations or sectors with particularly acute skill shortages, where the potential gains from integrating refugees into vocational training are likely to be largest.

Taken together, our findings underscore that access to vocational training is not merely a supply-side issue but is shaped by employer perceptions, uncertainty, and institutional constraints. Policies that reduce information friction, especially those improving language proficiency and enabling credible signals of soft skills, appear most effective

in facilitating refugees' entry into apprenticeship training. By addressing these demand-side barriers, host countries can better harness the integration potential of vocational training and contribute to a more inclusive and efficient labor market.

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# Appendix

## A Additional Figures and Tables

### A.1 Additional Figures

Figure A.1: Decision screen of DCE



Für welche\*n der beiden vorgeschlagenen Kandidat\*innen würden Sie sich entscheiden?

|                                          | Kandidat*in 1                                | Kandidat*in 2                                 |
|------------------------------------------|----------------------------------------------|-----------------------------------------------|
| Geburtsort                               | Deutschland                                  | Syrien                                        |
| Alter                                    | 17                                           | 27                                            |
| Geschlecht                               | Männlich                                     | Weiblich                                      |
| Rechtlicher Status                       | Deutsche Staatsbürgerschaft                  | Anerkannt                                     |
| Formale Schulbildung                     | Mittelschulabschluss in Deutschland erworben | Gymnasium-Äquivalent im Ausland erworben      |
| Deutschkenntnisse                        | Muttersprache                                | Vollkommen selbständige Sprachverwendung (B2) |
| Unentschuldigte Fehlzeiten in der Schule | Keine (0%)                                   | Rund einen Tag alle zwei Wochen (10%)         |
| Sonstige relevante Informationen         | Aktives Mitglied im Sportverein              | Keine                                         |
|                                          | <a href="#">Select</a>                       | <a href="#">Select</a>                        |

**Notes:** The figure shows the hiring decision of the companies in version 1 of the experiment. Here, companies had to decide between a German and a refugee candidate.

**Figure A.2:** Decision screen of DCE with policy



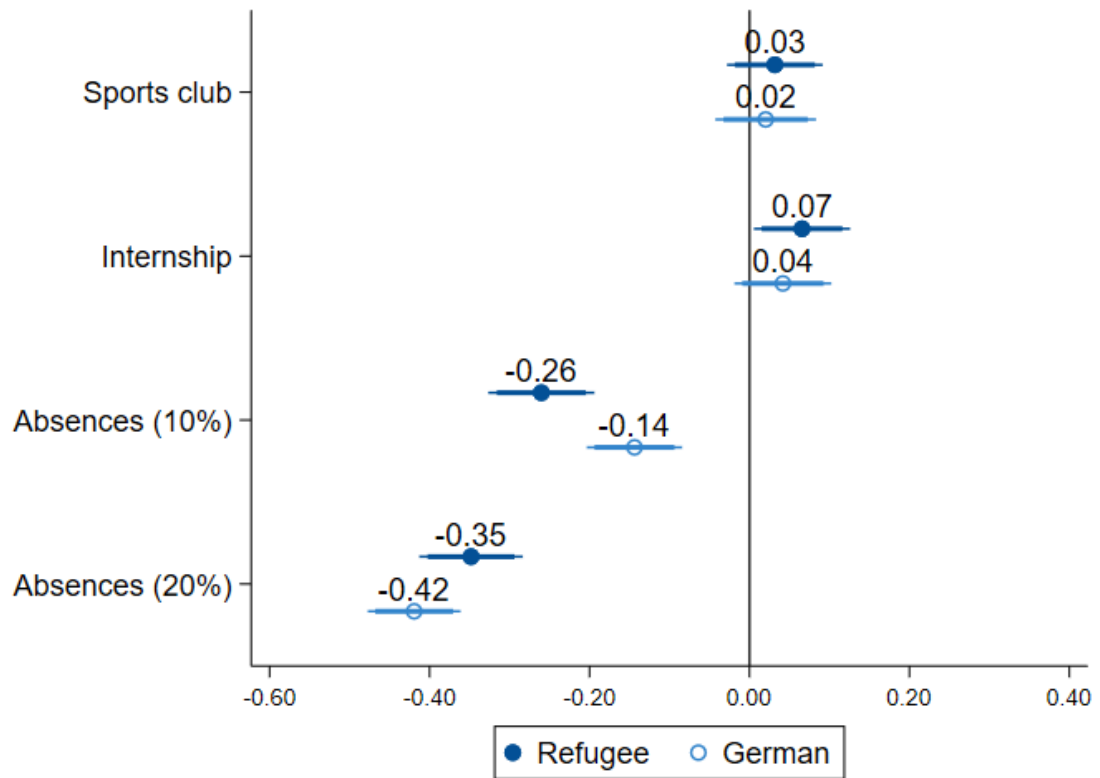
Erinnerung: Geflüchtete nehmen an vorgeschaltetem Sprachprogramm teil

Für welche\*n der beiden vorgeschlagenen Kandidat\*innen würden Sie sich entscheiden?

|                                          | Kandidat*in 1                                | Kandidat*in 2                                 |
|------------------------------------------|----------------------------------------------|-----------------------------------------------|
| Geburtsort                               | Deutschland                                  | Syrien                                        |
| Alter                                    | 17                                           | 27                                            |
| Geschlecht                               | Männlich                                     | Weiblich                                      |
| Rechtlicher Status                       | Deutsche Staatsbürgerschaft                  | Anerkannt                                     |
| Formale Schulbildung                     | Mittelschulabschluss in Deutschland erworben | Gymnasium-Äquivalent im Ausland erworben      |
| Deutschkenntnisse                        | Muttersprache                                | Vollkommen selbständige Sprachverwendung (B2) |
| Unentschuldigte Fehlzeiten in der Schule | Keine (0%)                                   | Rund einen Tag alle zwei Wochen (10%)         |
| Sonstige relevante Informationen         | Aktives Mitglied im Sportverein              | Keine                                         |
|                                          | <input type="button" value="Select"/>        | <input type="button" value="Select"/>         |

**Notes:** The figure depicts the hiring decision of the companies in version 3 of the experiment, that is, the standard DCE combined with a policy information treatment. In this example, the companies had to decide between a German and a refugee candidate under the condition that the refugee candidate would participate in a preparatory job-specific language course for about a year before the start of the actual apprenticeship.

**Figure A.3:** Effect of signals for soft skills (refugee vs. German applicants)



**Notes:** The dots in this figure represent the magnitude of the AMCEs of the signals of soft skills on hiring probability from an OLS regression in Appendix Table A.9, Column 1. The lines depict the respective 95% confidence interval. N= 1380 decisions by 276 firms.

## A.2 Additional Tables

**Table A.1:** Descriptive statistics – full sample vs. DCE sample

| Category                      | Subcategory                   | Full sample |        | DCE sample |        |
|-------------------------------|-------------------------------|-------------|--------|------------|--------|
|                               |                               | n           | %      | n          | %      |
| Institutional affiliation     |                               |             |        |            |        |
|                               | HWK München-Oberbayern        | 170         | 16.6   | 120        | 15.1   |
|                               | HWK Unterfranken              | 169         | 15.6   | 127        | 15.9   |
|                               | IHK München-Oberbayern        | 122         | 11.9   | 106        | 13.3   |
|                               | IHK Rhein-Neckar              | 28          | 2.7    | 20         | 2.5    |
|                               | IHK Schwaben                  | 178         | 17.4   | 137        | 17.2   |
|                               | IHK Stuttgart                 | 58          | 5.7    | 45         | 5.7    |
|                               | IHK Würzburg-Schweinfurt      | 307         | 30.0   | 242        | 30.4   |
|                               | Total                         | 1023        | 100.0  | 797        | 100.0  |
| Sector of main activity (IHK) |                               |             |        |            |        |
|                               | Industry                      | 154         | 22.2   | 128        | 22.9   |
|                               | Construction                  | 69          | 10.0   | 47         | 8.4    |
|                               | Trade                         | 138         | 19.9   | 116        | 20.8   |
|                               | Services                      | 228         | 32.9   | 187        | 33.5   |
|                               | Other                         | 102         | 14.7   | 81         | 14.5   |
|                               | Unknown                       | 2           | 0.3    | –          | –      |
|                               | Total                         | 693         | 100.00 | 559        | 100.00 |
| Sector of main activity (HWK) |                               |             |        |            |        |
|                               | Construction industry         | 55          | 16.7   | 45         | 18.9   |
|                               | Finishing trades              | 67          | 20.3   | 51         | 21.4   |
|                               | Craft for commercial purposes | 39          | 11.8   | 30         | 12.6   |
|                               | Automotive industry           | 28          | 8.5    | 21         | 8.8    |
|                               | Food industry                 | 25          | 7.6    | 20         | 8.4    |
|                               | Healthcare sector             | 17          | 5.2    | 11         | 4.6    |
|                               | Craft for private purposes    | 35          | 10.6   | 26         | 10.9   |
|                               | Other                         | 50          | 15.2   | 34         | 14.3   |
|                               | Unknown                       | 23          | 4.2    | –          | –      |
|                               | Total                         | 339         | 100.00 | 238        | 100.00 |

**Notes:** The companies are split by affiliation to their respective Chamber of Industry and Commerce (IHK) or Chamber of Crafts (HWK).

**Table A.2:** Representativeness of firm participants

| Chamber                 | 1    |    | 2–5  |    | 6–10 |    | 10+  |    |
|-------------------------|------|----|------|----|------|----|------|----|
|                         | Freq | %  | Freq | %  | Freq | %  | Freq | %  |
| <b>HWK Munich</b>       |      |    |      |    |      |    |      |    |
| Population              | 4068 | 52 | 3112 | 40 | 403  | 5  | 271  | 3  |
| Sample                  | 38   | 32 | 64   | 53 | 8    | 7  | 10   | 8  |
| <b>HWK Unterfranken</b> |      |    |      |    |      |    |      |    |
| Population              | 1301 | 52 | 961  | 39 | 139  | 6  | 94   | 4  |
| Sample                  | 54   | 43 | 53   | 42 | 14   | 11 | 6    | 5  |
| <b>IHK Munich</b>       |      |    |      |    |      |    |      |    |
| Population              | 4383 | 47 | 3533 | 38 | 619  | 7  | 779  | 8  |
| Sample                  | 19   | 18 | 33   | 31 | 18   | 17 | 36   | 34 |
| <b>IHK Rhein-Neckar</b> |      |    |      |    |      |    |      |    |
| Population              | –    | –  | –    | –  | –    | –  | –    | –  |
| Sample                  | 6    | 30 | 9    | 45 | 2    | 10 | 3    | 15 |
| <b>IHK Schwaben</b>     |      |    |      |    |      |    |      |    |
| Population              | 1169 | 34 | 1422 | 41 | 399  | 11 | 490  | 14 |
| Sample                  | 27   | 20 | 59   | 43 | 17   | 12 | 34   | 25 |
| <b>IHK Stuttgart</b>    |      |    |      |    |      |    |      |    |
| Population              | 2547 | 44 | 2199 | 38 | 533  | 9  | 476  | 8  |
| Sample                  | 3    | 7  | 17   | 38 | 7    | 16 | 18   | 40 |
| <b>IHK Wuerzburg</b>    |      |    |      |    |      |    |      |    |
| Population              | 777  | 47 | 602  | 36 | 120  | 7  | 157  | 9  |
| Sample                  | 52   | 21 | 89   | 37 | 33   | 14 | 68   | 28 |

**Notes:** Chamber of Industry and Commerce = IHK; Chamber of Crafts = HWK. Firm size is measured by the number of apprentices currently employed. Percentages are row-wise and rounded to the nearest integer, so rows need not sum to 100. Population counts are based on administrative data from the respective chambers and refer to firms with apprentices. For IHK Rhein-Neckar, population counts are unavailable. N=797 firms that answered at least one DCE situation.

**Table A.3:** Exact wording of the treatments

| <b>Treatment</b>     | <b>Explanation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Decision screen</b>                                                                                         |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 1+3 language program | Applicants with refugee experience do not start their regular training immediately. Instead, they start with a preliminary year in which they complete general and subject-specific German courses three days a week and work in the company two days a week. This is intended to better prepare them for the language challenges they will face in practice and at vocational school. During this preliminary year, your company pays the trainees the salary for the regular first year of training. The language support itself is free of charge for your company. | Reminder: Refugees take part in language program beforehand.                                                   |
| Mentoring program    | Applicants with refugee experience take part in a mentoring program free of charge for your company for the entire duration of their training. The volunteer experts involved in this program help trainees with a refugee background to settle into our culture and overcome obstacles to integration. They also support the refugees in overcoming problems at vocational school and in the company.                                                                                                                                                                 | Reminder: Refugees take part in a mentoring program.                                                           |
| Automatic 3+2 rule   | Applicants with refugee experience are automatically guaranteed the right to stay and work in Germany for the entire training period and two years thereafter when they sign the training contract.                                                                                                                                                                                                                                                                                                                                                                    | Reminder: Refugees are automatically guaranteed to stay for 2 years after the vocational training is complete. |

**Notes:** The column "Explanation" was shown once before the experiment. The column "Decision screen" shows the exact wording of the treatment on the decision screen of the DCE.

**Table A.4:** Balance table - Attributes of firms

|                                    | (1) Ref-German | (2) Language<br>program | (3) Mentoring<br>program | (4) Automatic<br>3+2 rule | (5) Ref-Ref |
|------------------------------------|----------------|-------------------------|--------------------------|---------------------------|-------------|
| <b>Regional affiliation:</b>       |                |                         |                          |                           |             |
| Crafts München                     | 0.167          | 0.105                   | 0.222                    | 0.200                     | 0.112*      |
| Crafts Unterfranken                | 0.145          | 0.211                   | 0.083                    | 0.158                     | 0.147       |
| Industry München                   | 0.141          | 0.132                   | 0.125                    | 0.158                     | 0.119       |
| Industry Rhein-Neckar              | 0.022          | 0.013                   | 0.042                    | 0.011                     | 0.032       |
| Industry Schwaben                  | 0.152          | 0.211                   | 0.139                    | 0.147                     | 0.198       |
| Industry Stuttgart                 | 0.054          | 0.053                   | 0.042                    | 0.074                     | 0.058       |
| Industry Würzburg                  | 0.301          | 0.263                   | 0.347                    | 0.221                     | 0.335       |
| <b>Sector IHK:</b>                 |                |                         |                          |                           |             |
| Industry                           | 0.221          | 0.308                   | 0.280                    | 0.148                     | 0.228       |
| Construction                       | 0.111          | 0.077                   | 0.060                    | 0.098                     | 0.063       |
| Trade                              | 0.174          | 0.192                   | 0.180                    | 0.279                     | 0.228       |
| Services                           | 0.332          | 0.385                   | 0.340                    | 0.361                     | 0.316       |
| Others                             | 0.163          | 0.038*                  | 0.140                    | 0.115                     | 0.165       |
| <b>Sector Crafts:</b>              |                |                         |                          |                           |             |
| Construction industry              | 0.163          | 0.208                   | 0.182                    | 0.176                     | 0.222       |
| Finishing trades                   | 0.198          | 0.125                   | 0.091                    | 0.235                     | 0.292       |
| Commercial craft sector            | 0.151          | 0.208                   | 0.091                    | 0.118                     | 0.083       |
| Automotive industry                | 0.105          | 0.167                   | 0.091                    | 0.059                     | 0.056       |
| Food industry                      | 0.093          | 0.125                   | 0.136                    | 0.029                     | 0.069       |
| Health industry                    | 0.047          | 0.042                   | 0.045                    | 0.059                     | 0.042       |
| Private-use craft sector           | 0.151          | 0.042                   | 0.091                    | 0.029                     | 0.125       |
| Others                             | 0.093          | 0.083                   | 0.273                    | 0.294**                   | 0.111       |
| <b>Challenges:</b>                 |                |                         |                          |                           |             |
| Availability applicants training   | 0.658          | 0.697                   | 0.631                    | 0.689                     | 0.659       |
| Suitability applicants training    | 0.700          | 0.682                   | 0.615                    | 0.689                     | 0.663       |
| Takeover own graduates             | 0.156          | 0.136                   | 0.077                    | 0.162                     | 0.138       |
| Availability skilled workers       | 0.814          | 0.833                   | 0.846                    | 0.851                     | 0.821       |
| Suitability skilled workers        | 0.586          | 0.561                   | 0.554                    | 0.500                     | 0.545       |
| Availability leading professionals | 0.215          | 0.242                   | 0.246                    | 0.216                     | 0.179       |
| Wage demands too high              | 0.287          | 0.333                   | 0.323                    | 0.405*                    | 0.280       |
| Other                              | 0.051          | 0.045                   | 0.015                    | 0.081                     | 0.049       |
| No challenges                      | 0.013          | 0.000                   | 0.000                    | 0.000                     | 0.008       |

**Notes:** Table displays means across versions. For each attribute category, two-sided t-tests compare the mean in a given column to the pooled mean of the remaining columns. N=797 firms that answered at least one DCE situation. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.4:** Balance table - Attributes of firms (continued)

|                         | (1) Ref-German | (2) Language<br>program | (3) Mentoring<br>program | (4) Automatic<br>3+2 rule | (5) Ref-Ref |
|-------------------------|----------------|-------------------------|--------------------------|---------------------------|-------------|
| Overcoming shortages:   |                |                         |                          |                           |             |
| Strengthening training  | 0.776          | 0.712                   | 0.754                    | 0.784                     | 0.736       |
| Continuing education    | 0.705          | 0.530*                  | 0.677                    | 0.757                     | 0.638       |
| Retention measures      | 0.667          | 0.682                   | 0.692                    | 0.649                     | 0.679       |
| Search abroad           | 0.127          | 0.136                   | 0.123                    | 0.135                     | 0.171       |
| Guidance refugees       | 0.089          | 0.091                   | 0.077                    | 0.108                     | 0.089       |
| Increase attractiveness | 0.515          | 0.576                   | 0.508                    | 0.527                     | 0.496       |
| Increase workload PT    | 0.101          | 0.136                   | 0.108                    | 0.149                     | 0.122       |
| Other                   | 0.021          | 0.076                   | 0.031                    | 0.068                     | 0.033       |
| Not a challenge         | 0.013          | 0.015                   | 0.031                    | 0.000                     | 0.033       |
| Number of apprentices:  |                |                         |                          |                           |             |
| none                    | 0.033          | 0.039                   | 0.042                    | 0.011                     | 0.040       |
| 1                       | 0.214          | 0.105*                  | 0.194                    | 0.326**                   | 0.216       |
| 2–5                     | 0.409          | 0.513*                  | 0.375                    | 0.389                     | 0.388       |
| 6–10                    | 0.130          | 0.105                   | 0.181                    | 0.147                     | 0.101       |
| >10                     | 0.214          | 0.237                   | 0.208                    | 0.126*                    | 0.255       |
| Takeover rate:          |                |                         |                          |                           |             |
| up to quarter           | 0.121          | 0.122                   | 0.129                    | 0.172                     | 0.130       |
| quarter–half            | 0.125          | 0.081                   | 0.100                    | 0.086                     | 0.105       |
| half–three quarters     | 0.151          | 0.230                   | 0.157                    | 0.151                     | 0.181       |
| over three quarters     | 0.603          | 0.568                   | 0.614                    | 0.591                     | 0.583       |
| Leaving reasons:        |                |                         |                          |                           |             |
| Study                   | 0.504*         | 0.684*                  | 0.556                    | 0.579                     | 0.554       |
| Search other employer   | 0.319          | 0.355                   | 0.361                    | 0.284                     | 0.284       |
| Competitor offer        | 0.304          | 0.263                   | 0.292                    | 0.200*                    | 0.309       |
| Self-employment         | 0.094          | 0.066                   | 0.083                    | 0.053                     | 0.076       |
| Move away               | 0.185          | 0.145                   | 0.097                    | 0.211                     | 0.187       |
| Other reasons           | 0.207          | 0.145                   | 0.097*                   | 0.242                     | 0.187       |
| No quits                | 0.145          | 0.079                   | 0.194                    | 0.126                     | 0.129       |
| General questions:      |                |                         |                          |                           |             |
| HR department           | 0.767          | 0.816                   | 0.792                    | 0.705                     | 0.748       |
| Search employees        | 0.858          | 0.868                   | 0.903                    | 0.779*                    | 0.885       |
| Non-EU employees        | 0.457          | 0.473                   | 0.417                    | 0.442                     | 0.432       |
| Refugee employees       | 0.754          | 0.657                   | 0.733                    | 0.643                     | 0.733       |
| Wants apprentices       | 1.000          | 1.000                   | 1.000                    | 1.000                     | 1.000       |
| Benefit > costs         | 0.522          | 0.500                   | 0.597                    | 0.495                     | 0.589       |
| Wants to employ after   | 0.790          | 0.736                   | 0.768                    | 0.714                     | 0.738       |
| Observations            | 276            | 76                      | 72                       | 95                        | 278         |

**Notes:** Table displays means across versions. For each attribute category, two-sided t-tests compare the mean in a given column to the pooled mean of the remaining columns. N=797 firms that answered at least one DCE situation. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.5:** Balance table - Attributes of applicants

|                                           | (1) Refugee-German | (2) Language program | (3) Mentoring program | (4) Aut. 3+2 rule |
|-------------------------------------------|--------------------|----------------------|-----------------------|-------------------|
|                                           | mean               | mean                 | mean                  | mean              |
| <b>Socio-demographic characteristics:</b> |                    |                      |                       |                   |
| Gender:                                   |                    |                      |                       |                   |
| Male                                      | 0.681              | 0.662                | 0.662                 | 0.680             |
| Female                                    | 0.319              | 0.338                | 0.338                 | 0.320             |
| Age:                                      |                    |                      |                       |                   |
| Age (in years)                            | 20.250             | 20.266               | 20.279                | 20.187            |
| Place of birth:                           |                    |                      |                       |                   |
| Germany                                   | 0.500              | 0.500                | 0.500                 | 0.500             |
| Syria                                     | 0.246              | 0.251                | 0.254                 | 0.251             |
| Nigeria                                   | 0.254              | 0.249                | 0.246                 | 0.249             |
| Legal status:                             |                    |                      |                       |                   |
| Asylum                                    | 0.251              | 0.243                | 0.242                 | 0.244             |
| Tolerance permit                          | 0.249              | 0.257                | 0.258                 | 0.256             |
| German citizenship                        | 0.500              | 0.500                | 0.500                 | 0.500             |
| <b>Hard skills:</b>                       |                    |                      |                       |                   |
| Formal education:                         |                    |                      |                       |                   |
| Lower secondary school Germany            | 0.500              | 0.500                | 0.500                 | 0.500             |
| Lower secondary abroad                    | 0.124              | 0.118                | 0.108                 | 0.124             |
| Secondary abroad                          | 0.124              | 0.136                | 0.143                 | 0.129             |
| Secondary school Germany                  | 0.125              | 0.130                | 0.119                 | 0.126             |
| Tertiary abroad                           | 0.128              | 0.116                | 0.129                 | 0.120             |
| German proficiency:                       |                    |                      |                       |                   |
| Intermediate (B1)                         | 0.253              | 0.249                | 0.256                 | 0.252             |
| Advanced Intermediate (B2)                | 0.247              | 0.251                | 0.244                 | 0.248             |
| Mothertongue                              | 0.500              | 0.500                | 0.500                 | 0.500             |
| <b>Signals for soft skills:</b>           |                    |                      |                       |                   |
| Absences:                                 |                    |                      |                       |                   |
| No absences                               | 0.333              | 0.333                | 0.324                 | 0.331             |
| 10 % Absences                             | 0.335              | 0.330                | 0.329                 | 0.344             |
| 20 % Absences                             | 0.332              | 0.337                | 0.347                 | 0.325             |
| Other signals for soft skills:            |                    |                      |                       |                   |
| Sports club                               | 0.330              | 0.337                | 0.339                 | 0.336             |
| Internship                                | 0.337              | 0.330                | 0.326                 | 0.334             |
| None                                      | 0.333              | 0.333                | 0.335                 | 0.331             |
| Observations                              | 2760               | 760                  | 720                   | 950               |

**Notes:** The table reports shares of applicant attributes across the four experimental versions of the discrete choice experiment that compare Germans and refugees (version 1 and 3). Each column corresponds to the set of applicant profiles shown in the respective treatment arm. All characteristics are experimentally randomized at the profile level, implying that differences across columns reflect random variation rather than systematic differences. For each attribute category, two-sided t-tests compare the mean in a given column to the pooled mean of the remaining columns. The refugee candidate appeared on the left-hand side of the DCE display in 1267 of 2595 refugee choice tasks (48.8%). N=519 firms that answered at least one DCE situation in a refugees-German comparison. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.6:** Balance table - Attributes of respondents

|                                              | (1) Ref-German<br>mean | (2) Language<br>program<br>mean | (3) Mentoring<br>program<br>mean | (4) Automatic<br>3+2 rule<br>mean | (5) Ref-Ref<br>mean |
|----------------------------------------------|------------------------|---------------------------------|----------------------------------|-----------------------------------|---------------------|
| <b>Respondent characteristics:</b>           |                        |                                 |                                  |                                   |                     |
| <b>Position of respondent:</b>               |                        |                                 |                                  |                                   |                     |
| Human resources                              | 0.398                  | 0.394                           | 0.431                            | 0.330                             | 0.402               |
| Administration                               | 0.082                  | 0.127                           | 0.077                            | 0.077                             | 0.145*              |
| Management                                   | 0.254                  | 0.239                           | 0.231                            | 0.297                             | 0.225               |
| Owner                                        | 0.168                  | 0.141                           | 0.185                            | 0.187                             | 0.116               |
| Other                                        | 0.098                  | 0.099                           | 0.077                            | 0.110                             | 0.112               |
| <b>Hiring decisions in the last 5 years:</b> |                        |                                 |                                  |                                   |                     |
| None                                         | 0.047                  | 0.070                           | 0.091                            | 0.034                             | 0.049               |
| 1–5                                          | 0.208                  | 0.183                           | 0.167                            | 0.284                             | 0.283*              |
| 6–20                                         | 0.380                  | 0.324                           | 0.394                            | 0.295                             | 0.332               |
| More than 20                                 | 0.365                  | 0.423                           | 0.348                            | 0.386                             | 0.336               |
| <b>Gender of respondent:</b>                 |                        |                                 |                                  |                                   |                     |
| Female                                       | 0.566                  | 0.592                           | 0.600                            | 0.527                             | 0.611               |
| Male                                         | 0.434                  | 0.408                           | 0.400                            | 0.462                             | 0.389               |
| Observations                                 | 276                    | 76                              | 72                               | 95                                | 278                 |

**Notes:** Each column reports the mean of the indicated respondent characteristic in the respective DCE version. For each attribute category, two-sided t-tests compare the mean in a given column to the pooled mean of the remaining columns. N=797 firms that answered at least one DCE situation. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.7:** Attributes of applicants and their relative share

| Attribute                       | Refugees                  |                   |            | Germans                           |                   |            |
|---------------------------------|---------------------------|-------------------|------------|-----------------------------------|-------------------|------------|
|                                 | Level                     | Share<br>Designed | Share True | Level                             | Share<br>Designed | Share True |
| <b>Socio-demographics:</b>      |                           |                   |            |                                   |                   |            |
| Age                             |                           |                   |            | 17                                | 50%               | 49.6%      |
|                                 |                           |                   |            | 18                                | 50%               | 50.4%      |
|                                 | 19                        | 11.1%             | 11.2%      |                                   |                   |            |
|                                 | 20                        | 11.1%             | 10.6%      |                                   |                   |            |
|                                 | 21                        | 11.1%             | 11.2%      |                                   |                   |            |
|                                 | 22                        | 11.1%             | 11.4%      |                                   |                   |            |
|                                 | 23                        | 11.1%             | 11.9%      |                                   |                   |            |
|                                 | 24                        | 11.1%             | 10.7%      |                                   |                   |            |
|                                 | 25                        | 11.1%             | 10.3%      |                                   |                   |            |
|                                 | 26                        | 11.1%             | 11.4%      |                                   |                   |            |
|                                 | 27                        | 11.1%             | 11.2%      |                                   |                   |            |
| Gender                          | Male                      | 66.7%             | 66.9%      | Male                              | 66.7%             | 69.3%      |
|                                 | Female                    | 33.3%             | 33.1%      | Female                            | 33.3%             | 30.6%      |
| Place of birth                  |                           |                   |            | Germany                           | 100%              | 100%       |
|                                 | Syria                     | 50%               | 49.2%      |                                   |                   |            |
|                                 | Nigeria                   | 50%               | 50.8%      |                                   |                   |            |
| Legal status                    |                           |                   |            | German citizenship                | 100%              | 100%       |
|                                 | Asylum                    | 50%               | 50.2%      |                                   |                   |            |
|                                 | Tolerance permit          | 50%               | 49.8%      |                                   |                   |            |
| <b>Hard skills:</b>             |                           |                   |            |                                   |                   |            |
| Education                       |                           |                   |            | Lower secondary<br>school Germany | 100%              | 100%       |
|                                 | Lower secondary<br>abroad | 25%               | 24.7%      |                                   |                   |            |
|                                 | Secondary abroad          | 25%               | 24.7%      |                                   |                   |            |
|                                 | Secondary school          | 25%               | 25%        |                                   |                   |            |
|                                 | Ger.<br>Tertiary abroad   | 25%               | 25.6%      |                                   |                   |            |
| German                          |                           |                   |            | Mother-tongue                     | 100%              | 100%       |
|                                 | Intermediate (B1)         | 50%               | 50.6%      |                                   |                   |            |
|                                 | Advanced                  | 50%               | 49.4%      |                                   |                   |            |
|                                 | Intermediate (B2)         |                   |            |                                   |                   |            |
| <b>Signals for soft skills:</b> |                           |                   |            |                                   |                   |            |
| Absences                        | None                      | 33.3%             | 33.8%      | None                              | 33.3%             | 32.8%      |
|                                 | 10% Absences              | 33.3%             | 33.3%      | 10% Absences                      | 33.3%             | 33.6%      |
|                                 | 20% Absences              | 33.3%             | 32.8%      | 20% Absences                      | 33.3%             | 33.6%      |
| Other signals                   | None                      | 33.3%             | 33.3%      | None                              | 33.3%             | 33.2%      |
|                                 | Sports club               | 33.3%             | 33.8%      | Sports club                       | 33.3%             | 32.3%      |
|                                 | Internship                | 33.3%             | 32.9%      | Internship                        | 33.3%             | 34.4%      |

**Notes:** The table presents all attributes of the applicants in the experiment and their intended share. That means it displays how often it should be the case that a certain attribute is present in the experiment (Share Designed) and how often it was present in the actual responses (Share True).

**Table A.8:** Hiring probabilities and employability ratings by DCE version

| DCE version         | Refugee selected | Rating: Refugee  | Rating: German   | N    |
|---------------------|------------------|------------------|------------------|------|
| No Policy           | 0.393<br>(0.489) | 2.985<br>(1.025) | 3.224<br>(1.085) | 2760 |
| Language Program    | 0.463<br>(0.499) | 3.028<br>(1.036) | 3.089<br>(1.084) | 760  |
| Mentoring Program   | 0.381<br>(0.486) | 2.932<br>(0.945) | 3.238<br>(0.989) | 720  |
| Aut. 3+2 Rule       | 0.394<br>(0.489) | 2.969<br>(1.041) | 3.135<br>(1.071) | 950  |
| Overall             | 0.402<br>(0.490) | 2.981<br>(1.019) | 3.190<br>(1.070) | 5190 |
| Refugee vs. Refugee | 1.000<br>(0.000) | 2.760<br>(1.034) | –                | 2780 |

**Notes:** The table reports means and standard deviations by discrete-choice-experiment version. *Refugee selected* is an indicator equal to one if the refugee applicant is selected. Employability ratings range from 1 (very unlikely) to 5 (very likely). The overall refugee-selection statistic pools the DCE versions comparing a refugee applicant with a German applicant. Standard deviations are reported in parentheses.

**Table A.9:** Probability to hire a refugee for vocational training

|                                           | (1)                  | (2)                  | (3)                  | (4)                  |
|-------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Socio-demographic characteristics:</b> |                      |                      |                      |                      |
| Female                                    | −0.016<br>(0.013)    | −0.015<br>(0.013)    | −0.014<br>(0.013)    | −0.022<br>(0.015)    |
| Age                                       | −0.008*<br>(0.004)   | −0.008*<br>(0.004)   | −0.007*<br>(0.004)   | −0.007<br>(0.004)    |
| Tolerance permit                          | −0.051**<br>(0.021)  | −0.052**<br>(0.021)  | −0.051**<br>(0.021)  | −0.056***<br>(0.021) |
| <b>Hard Skills:</b>                       |                      |                      |                      |                      |
| Secondary abroad                          | 0.062**<br>(0.030)   | 0.062**<br>(0.030)   | 0.065**<br>(0.030)   | 0.100***<br>(0.031)  |
| Secondary Germany                         | 0.101***<br>(0.029)  | 0.102***<br>(0.029)  | 0.099***<br>(0.030)  | 0.106***<br>(0.030)  |
| Tertiary abroad                           | 0.121***<br>(0.030)  | 0.121***<br>(0.030)  | 0.117***<br>(0.030)  | 0.128***<br>(0.030)  |
| B1 German                                 | −0.073***<br>(0.022) | −0.073***<br>(0.022) | −0.072***<br>(0.022) | −0.080***<br>(0.021) |
| <b>Signals for soft skills:</b>           |                      |                      |                      |                      |
| Sports club                               | 0.032<br>(0.030)     | 0.032<br>(0.030)     | 0.032<br>(0.030)     | 0.025<br>(0.030)     |
| Internship                                | 0.066**<br>(0.031)   | 0.067**<br>(0.031)   | 0.071**<br>(0.030)   | 0.064**<br>(0.030)   |
| 10% absent                                | −0.260***<br>(0.034) | −0.260***<br>(0.034) | −0.260***<br>(0.034) | −0.259***<br>(0.030) |
| 20% absent                                | −0.348***<br>(0.033) | −0.350***<br>(0.033) | −0.351***<br>(0.033) | −0.361***<br>(0.030) |
| <b>Signals for soft skills German:</b>    |                      |                      |                      |                      |
| Sports club                               | −0.020<br>(0.032)    | −0.018<br>(0.032)    | −0.018<br>(0.032)    | −0.020<br>(0.030)    |
| Internship                                | −0.042<br>(0.031)    | −0.040<br>(0.031)    | −0.041<br>(0.031)    | −0.050*<br>(0.030)   |
| 10% absent                                | 0.144***<br>(0.030)  | 0.145***<br>(0.030)  | 0.144***<br>(0.030)  | 0.148***<br>(0.030)  |
| 20% absent                                | 0.419***<br>(0.030)  | 0.419***<br>(0.030)  | 0.419***<br>(0.030)  | 0.425***<br>(0.030)  |
| Constant                                  | 0.446***<br>(0.064)  | 0.474***<br>(0.066)  | 0.370***<br>(0.081)  | 0.443***<br>(0.062)  |
| Location FE                               | No                   | Yes                  | Yes                  | No                   |
| Firm controls                             | No                   | No                   | Yes                  | No                   |
| Firm FE                                   | No                   | No                   | No                   | Yes                  |
| Observations                              | 1380                 | 1380                 | 1380                 | 1380                 |

**Notes:** OLS coefficients from equation 1 where the binary outcome indicates whether the refugee is chosen for an apprenticeship; robust standard errors clustered at the firm level in parentheses. Sample includes firms receiving the Refugee vs. German DCE and is restricted to refugee candidates. German competitors' age and gender are controlled for. Firm controls include size and prior experience with non-EU workers. The omitted baseline category for the refugee applicant is: male, asylum accepted, lower secondary education abroad, German proficiency B2, no additional information, and no absences. The omitted baseline category for the German comparison profile is: male, no additional information, no absences, and age 17. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.10:** Explanatory power of legal status, formal qualifications, and soft skills

|                                                  | <i>Legal status and formal qualifications</i><br>Legal status, education, language | <i>Soft skills</i><br>Extracurricular activities, absences |
|--------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------|
| <i>Panel A: Explanatory power</i>                |                                                                                    |                                                            |
| Full model $R^2$                                 | 0.338                                                                              | 0.338                                                      |
| Restricted model $R^2$                           | 0.321                                                                              | 0.268                                                      |
| Increase in $R^2$                                | 0.017                                                                              | 0.070                                                      |
| Share of total $R^2$                             | 5.1%                                                                               | 20.7%                                                      |
| Joint $F$ -statistic                             | 6.598***                                                                           | 30.785***                                                  |
| Degrees of freedom                               | (5, 275)                                                                           | (4, 275)                                                   |
| $p$ -value                                       | < 0.001                                                                            | < 0.001                                                    |
| <i>Panel B: Hiring rates at extreme profiles</i> |                                                                                    |                                                            |
| <i>Worst profile</i>                             | Tolerance permit, lower secondary abroad, B1                                       | No extracurricular activity, 20% absences                  |
| Predicted hiring rate (95% CI)                   | 25.9% [20.6%, 31.3%]                                                               | 21.3% [16.4%, 26.3%]                                       |
| Observed hiring rate                             | 31.6% ( $n = 76$ )                                                                 | 10.4% ( $n = 163$ )                                        |
| <i>Best profile</i>                              | Asylum accepted, tertiary abroad, B2                                               | Internship, no absences                                    |
| Predicted hiring rate (95% CI)                   | 50.5% [45.2%, 55.8%]                                                               | 62.7% [56.7%, 68.8%]                                       |
| Observed hiring rate                             | 51.5% ( $n = 101$ )                                                                | 75.0% ( $n = 152$ )                                        |

**Notes:** Results are based on column (1) from Table A.9, restricted to refugee-candidate rows, estimated by OLS with standard errors clustered at the firm level (276 clusters;  $N = 1,380$ ). The full model includes all applicant and German comparison-profile characteristics. The restricted models sequentially exclude either legal status, education, and German-language proficiency, or extracurricular activities and absences, while retaining all remaining regressors. Predicted hiring rates are computed using margins, with all other covariates held at their sample means. The hard-skill profiles refer to a tolerance permit, lower secondary education abroad, and B1 proficiency versus accepted asylum, tertiary education abroad, and B2 proficiency. The soft-skill profiles refer to no extracurricular activity and 20% absences versus an internship and no absences. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.11:** Equality of soft-skill returns: refugee vs. German applicant

| Soft skill              | (a) Baseline |          | (b) + Controls |          |
|-------------------------|--------------|----------|----------------|----------|
|                         | <i>F</i>     | <i>p</i> | <i>F</i>       | <i>p</i> |
| Absences (10%)          | 4.12         | 0.043**  | 6.71           | 0.010**  |
| Absences (20%)          | 1.85         | 0.175    | 0.44           | 0.510    |
| Sports club             | 0.04         | 0.837    | 0.00           | 0.980    |
| Internship              | 0.20         | 0.657    | 0.04           | 0.837    |
| Joint (all soft skills) | 3.42         | 0.009*** | 3.16           | 0.015**  |

**Notes:** The table reports formal tests of whether the effect of each soft-skill signal on the hiring decision is the same for the refugee applicant and the German competitor. Because a stronger German competitor lowers the probability of hiring the refugee, the German coefficient enters the choice regression with the opposite sign; equality of the two returns therefore corresponds to the symmetry hypothesis  $H_0 : \beta_{\text{refugee}} + \beta_{\text{German}} = 0$ . Each cell reports the *F*-statistic and *p*-value of a Wald test of this restriction (one restriction for each individual soft skill and joint restrictions across all soft skills in the final row). Standard errors are clustered at the respondent level.

Column (a) reports tests from the baseline specification using the full sample. Column (b) adds regional dummies and firm characteristics, including the number of apprentices, the share or presence of non-EU employees, the respondent's position, and hiring responsibility. A significant statistic indicates that equality of the refugee and German returns is rejected. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.12:** Probability to hire a refugee with policies

|                                           | (1)                  | (2)                  | (3)                  |
|-------------------------------------------|----------------------|----------------------|----------------------|
| <b>Socio-demographic characteristics:</b> |                      |                      |                      |
| Female                                    | −0.009<br>(0.010)    | −0.009<br>(0.010)    | −0.009<br>(0.010)    |
| Age                                       | −0.005<br>(0.003)    | −0.005<br>(0.003)    | −0.004<br>(0.003)    |
| Tolerance permit                          | −0.046***<br>(0.015) | −0.046***<br>(0.015) | −0.047***<br>(0.015) |
| <b>Hard Skills:</b>                       |                      |                      |                      |
| Secondary abroad                          | 0.062***<br>(0.021)  | 0.062***<br>(0.021)  | 0.064***<br>(0.021)  |
| Secondary Germany                         | 0.107***<br>(0.021)  | 0.108***<br>(0.021)  | 0.106***<br>(0.021)  |
| Tertiary abroad                           | 0.126***<br>(0.022)  | 0.126***<br>(0.022)  | 0.122***<br>(0.022)  |
| B1 German                                 | −0.059***<br>(0.016) | −0.059***<br>(0.016) | −0.059***<br>(0.016) |
| <b>Signals for soft skills:</b>           |                      |                      |                      |
| Sports club                               | 0.027<br>(0.023)     | 0.027<br>(0.023)     | 0.026<br>(0.023)     |
| Internship                                | 0.087***<br>(0.022)  | 0.087***<br>(0.022)  | 0.089***<br>(0.022)  |
| 10% absent                                | −0.235***<br>(0.024) | −0.234***<br>(0.024) | −0.235***<br>(0.024) |
| 20% absent                                | −0.364***<br>(0.023) | −0.365***<br>(0.023) | −0.367***<br>(0.023) |
| <b>Policies:</b>                          |                      |                      |                      |
| 1 + 3 language program                    | 0.072**<br>(0.029)   | 0.073**<br>(0.029)   | 0.080***<br>(0.030)  |
| Mentoring program                         | −0.007<br>(0.028)    | −0.009<br>(0.028)    | −0.005<br>(0.028)    |
| Automatic 3 + 2 rule                      | 0.021<br>(0.027)     | 0.020<br>(0.027)     | 0.016<br>(0.027)     |
| <b>Signals for soft skills German:</b>    |                      |                      |                      |
| Sports club                               | −0.014<br>(0.023)    | −0.014<br>(0.023)    | −0.016<br>(0.023)    |
| Internship                                | −0.014<br>(0.022)    | −0.014<br>(0.022)    | −0.017<br>(0.022)    |
| 10% absent                                | 0.165***<br>(0.022)  | 0.165***<br>(0.022)  | 0.167***<br>(0.022)  |
| 20% absent                                | 0.402***<br>(0.023)  | 0.401***<br>(0.023)  | 0.401***<br>(0.023)  |
| Constant                                  | 0.381***<br>(0.047)  | 0.401***<br>(0.049)  | 0.376***<br>(0.071)  |
| Location FE                               | No                   | Yes                  | Yes                  |
| Firm controls                             | No                   | No                   | Yes                  |
| Observations                              | 2595                 | 2595                 | 2595                 |

**Notes:** OLS coefficients where the binary outcome indicates whether the refugee is chosen for an apprenticeship; robust standard errors clustered at the firm level in parentheses. German competitors' age and gender are controlled for; firm controls include size and prior experience with non-EU workers. The omitted baseline category for the refugee applicant is: male, asylum accepted, lower secondary education abroad, German proficiency B2, no additional information, and no absences. The omitted policy category is no policy. The omitted baseline category for the German comparison profile is: male, no additional information, no absences, and age 17. The 1 + 3 language program includes an extra year that precedes vocational training; the mentoring program includes an extended mentor who supports the refugee apprentice; the automatic 3 + 2 rule guarantees that the refugee can stay in the host country for at least five years after the start of vocational training.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Table A.13:** Testing for validity: stability / no carryover and no profile-order effects

| Applicant characteristic | Stability / no carryover |      | No profile-order effects |      |
|--------------------------|--------------------------|------|--------------------------|------|
|                          | $F$                      | $p$  | $F$                      | $p$  |
| Tolerance permit         | 0.08                     | 0.99 | 0.20                     | 0.82 |
| Secondary abroad         | 0.16                     | 0.96 | 0.12                     | 0.73 |
| Secondary Germany        | 1.31                     | 0.26 | 0.10                     | 0.75 |
| Tertiary abroad          | 4.44                     | 0.01 | 0.95                     | 0.33 |
| German proficiency (B1)  | 0.79                     | 0.53 | 0.22                     | 0.80 |
| Sports club              | 1.96                     | 0.10 | 1.61                     | 0.20 |
| Internship               | 1.86                     | 0.11 | 1.27                     | 0.26 |
| Absences (10%)           | 1.44                     | 0.22 | 0.03                     | 0.85 |
| Absences (20%)           | 0.70                     | 0.60 | 4.95                     | 0.03 |

**Notes:** The table reports  $F$ -statistics and corresponding  $p$ -values from tests of whether the AMCEs of applicant characteristics are stable across choice tasks and profile positions. For the task-order test, we regress the choice outcome on indicators for applicant characteristics, task indicators, and their interactions. For the profile-order test, we replace the task indicators with an indicator for profile position and its interactions with applicant characteristics. We then conduct  $F$ -tests of the joint significance of the respective interaction terms.

**Table A.14:** Refugee and German hiring likelihood and ratings by labor market tightness

|                     | Refugee             |                     | German              |                     |
|---------------------|---------------------|---------------------|---------------------|---------------------|
|                     | Choice              | Rating              | Choice              | Rating              |
| High tightness      | −0.050**<br>(0.024) | 0.029<br>(0.077)    | 0.050**<br>(0.024)  | 0.156**<br>(0.078)  |
| Constant            | 0.299***<br>(0.090) | 3.299***<br>(0.314) | 0.772***<br>(0.095) | 4.071***<br>(0.338) |
| N                   | 2315                | 2257                | 2315                | 2286                |
| DCE characteristics | YES                 | YES                 | YES                 | YES                 |
| Location FE         | YES                 | YES                 | YES                 | YES                 |
| Firm controls       | YES                 | YES                 | YES                 | YES                 |

**Notes.** Coefficients from OLS regressions. Clustered standard errors at the company level are reported in parentheses. Columns (1) and (3) use a binary indicator for whether the respective candidate was hired as the dependent variable. Columns (2) and (4) use the five-point employability rating. The sample refers to companies assigned to the Refugee–German DCE versions, including the policy extensions. Labor market tightness is the share of vacant apprenticeships divided by the number of unserved applicants in the NUTS3 location  $\times$  two-digit industry cell. High labor market tightness is defined as being above the median. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## B Robustness to mixed logit estimation

This section shows that our findings are robust to re-estimating our main results with a mixed logit model, stemming from an indirect utility function.

### B.1 Model Setup

The indirect utility function looks as follows: The utility is  $U_{ijk}$ , meaning firm manager  $i$ 's utility from alternative  $j$  in choice task  $k$ :

$$U_{ijk}^* = \alpha + \beta^\top \mathbf{X}_{ijk} + \varepsilon_{ijk}, \quad (2)$$

where

- $\mathbf{X}_{ijk}$  is a vector of observed attributes of alternative  $j$ .
- $\beta$  is a vector of individual-specific taste parameters, which follow Gaussian-distributed random coefficients
- $\varepsilon_{ijk}$  follows an extreme value type 1 (EV1) distribution, capturing idiosyncratic preference shocks, as standard in the WTP literature (Maestas et al., 2023; Mas and Pallais, 2017).

The probability of individual  $i$  choosing alternative  $j$  in choice situation  $k$  is given by:

$$P(U_{ijk} = 1) = \int \frac{\exp(\alpha + \beta^\top \mathbf{X}_{ijk})}{\sum_m \exp(\alpha + \beta^\top \mathbf{X}_{imk})} f(\beta) d\beta, \quad (3)$$

where  $f(\beta)$  is the distribution of random coefficients and it holds that individual  $i$  chooses alternative  $j$  if and only if:

$$U_{ijk}^* > U_{imk}, \quad \forall m \neq j. \quad (4)$$

So after observing all characteristics of the applicant, the manager chooses the one, that gives their firm the highest utility. For simplicity and to keep comparisons possible, we consider a linear model of utility.

**Table B.1:** Mixed logit: main marginal effects

|                                           | Mean Marginal Effect |
|-------------------------------------------|----------------------|
| <b>Socio-demographic characteristics:</b> |                      |
| Female                                    | -0.024**<br>(0.012)  |
| Age                                       | -0.010**<br>(0.005)  |
| Tolerance permit                          | -0.075*<br>(0.040)   |
| <b>Hard skills:</b>                       |                      |
| Secondary abroad                          | 0.107*<br>(0.057)    |
| Secondary Germany                         | 0.146*<br>(0.077)    |
| Tertiary abroad                           | 0.155*<br>(0.082)    |
| B1 German                                 | -0.101*<br>(0.054)   |
| <b>Signals for soft skills:</b>           |                      |
| Sports club                               | 0.028*<br>(0.015)    |
| Internship                                | 0.071**<br>(0.038)   |
| 10% absent                                | -0.219**<br>(0.116)  |
| 20% absent                                | -0.443*<br>(0.235)   |
| Observations                              | 2760                 |

*Notes:* Coefficients are mean marginal effects derived from a mixed logit model, where the dependent variable represents the binary choice in the discrete-choice experiment. Parentheses report the standard deviations of the estimated marginal effects. The sample consists of DCE profile evaluations comparing a refugee applicant with a German applicant. The omitted baseline category for the refugee applicant is: male, asylum accepted, lower secondary education abroad, German proficiency B2, no additional information, and no absences. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

**Table B.2:** Mixed logit: main marginal effects of intra-refugee comparison

|                                           | Mean Marginal Effect |
|-------------------------------------------|----------------------|
| <b>Socio-demographic characteristics:</b> |                      |
| Female                                    | 0.009<br>(0.007)     |
| Age                                       | -0.002<br>(0.002)    |
| Tolerance permit                          | -0.056***<br>(0.012) |
| <b>Hard Skills:</b>                       |                      |
| Lower secondary Germany                   | 0.038*<br>(0.023)    |
| Secondary abroad                          | 0.011<br>(0.023)     |
| Secondary Germany                         | 0.084***<br>(0.023)  |
| Tertiary abroad                           | 0.049**<br>(0.024)   |
| B1 German                                 | -0.086***<br>(0.012) |
| <b>Signals for Soft Skills:</b>           |                      |
| Sports club                               | 0.029<br>(0.018)     |
| Internship                                | 0.062***<br>(0.016)  |
| 10% absent                                | -0.157***<br>(0.016) |
| 20% absent                                | -0.352***<br>(0.016) |
| Observations                              | 2780                 |

**Notes:** Coefficients are derived from a mixed logit model, where the dependent variable represents the binary choice in the Discrete Choice Experiment (DCE). The reported values are the mean marginal effects, which reflect the average impact of each explanatory variable on the probability of the binary outcome. The sample here refers to the design with a paired refugee. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## C Survey questionnaire

This section provides information about the questionnaire and the exact wording of the questions. We first provide the English translation of the questionnaire, followed by the original wording in German.

### C.1 English questionnaire

#### 1. Company Training – Opportunities and Challenges

Thank you for participating in this study.

Answering the questions is voluntary. You may leave individual questions unanswered and may abort the survey at any time.

Naturally, all responses are anonymous and we handle the data collected confidentially.

If you agree, please press the “Next” button:

#### 2. [IHKHWK] To begin, we would like to ask you some general questions about your company and later focus more specifically on company training.

Which Chamber of Industry and Commerce (IHK) or Chamber of Crafts (HWK) does your company belong to?

1. HWK München-Oberbayern
2. HWK Unterfranken
3. IHK München-Oberbayern
4. IHK Rhein-Neckar
5. IHK Schwaben
6. IHK Stuttgart
7. IHK Würzburg-Schweinfurt

#### 3. [IHK....or HWK....] Please specify your location.

County/City of the respective chamber

#### 4. [BrancheIHK] In which industry is your company mainly active? [if Q2≥3]

1. Industry
2. Construction
3. Trade
4. Services

5. Other
5. **[BrancheHWK]** In which industry is your company mainly active? [if Q2==1 or Q2==2]
1. General construction
  2. Specialized construction
  3. Crafts for commercial purposes
  4. Motor vehicle trade
  5. Food industry
  6. Health industry
  7. Crafts for private use
  8. Other
6. **[HRDepartment]** Does your company have an independent Human Resources department, or is there at least one employee primarily responsible for HR matters?
1. Yes
  2. No
7. **[SearchforEmployees]** Is your company currently or soon looking for new employees?
1. Yes
  2. No
8. **[ChallengesEmployees]** What challenges is your company currently facing in recruiting employees? (Please tick all that apply.)
1. Availability of apprenticeship applicants
  2. Suitability of apprenticeship applicants
  3. Retention of your own apprenticeship graduates
  4. Availability of skilled workers
  5. Suitability of skilled workers
  6. Availability of managers
  7. Too high salary demands from applicants
  8. Other:

9. None
9. **[OvercomeSkillShortage]** What is your company doing to address the challenge of the shortage of skilled workers? (Please tick all that apply.)
1. Strengthening in-company training
  2. Further training of employees within the company
  3. Measures to retain employees
  4. Recruitment of workers from abroad
  5. Use of advisory services for employing refugees
  6. Increasing the attractiveness of the company (e.g., higher wages or more flexible working hours)
  7. Increasing work hours for part-time employees
  8. Other:
  9. Shortage of skilled workers is currently not a challenge
10. **[EmployeesNonEU]** Does your company employ staff from countries that are not part of the EU or associated with it (e.g., Norway, Switzerland)?
1. Yes
  2. No
11. **[EmployeesRefugees]** Are there among them employees with a refugee background? [if Q10==1]
1. Yes
  2. No
12. **[NumberApprentices]** How many apprentices does your company currently have in total?
1. None
  2. 1
  3. 2 – 5
  4. 6 – 10
  5. More than 10
13. **[WTEmployAppr]** Do you plan to hire apprentices in the coming training years?

1. Yes
  2. No
14. **[Applications]** On average, how many suitable applications do you expect per advertised apprenticeship position?
1. None
  2. Few
  3. Many
15. **[CostBenefitAppr]** Does in-company training pay off for your company financially during the training period?
1. Yes
  2. No
16. **[TakeoverRate]** What is the rate at which apprentices are retained by your company after training?
1. Up to one quarter
  2. Between one quarter and one half
  3. Between one half and three quarters
  4. Over three quarters
17. **[MoreTakover]** Would your company like to retain more apprentices after successful completion of their training?
1. Yes
  2. No
18. **[LeavingReasons]** If successful apprenticeship graduates decide not to stay with your company, what do you think are the decisive reasons for this? (Please tick all that apply.)
1. Pursuing further studies
  2. Looking for an alternative employer
  3. Offer from a competing company
  4. Self-employment
  5. Relocation

6. Other:
7. Does not apply
19. **[Occup]** Now we turn to potential applicants for an apprenticeship in your company. We would like to understand who in your company has a chance of being hired. Please first indicate for which occupation your company hires the most apprentices.

*[open-text-answer-field]*

**[INSTRUCTIONS for 1/3 of Participants: Standard Version 1]**

We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the occupation you have just specified. The individuals include both Germans and refugees. For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.

**[INSTRUCTIONS for 1/3 of Participants: Refugee only Version 2]**

We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the occupation you have just specified.

The individuals are refugees, as they represent a potentially important source of labor.

For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company in a direct comparison. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.

**[INSTRUCTIONS for 1/9 of Participants: 1+3 Language Program Treatment – Version 3.1]**

We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the occupation you have just specified. The individuals include both Germans and refugees. When deciding on hiring a refugee, please take the following scenario into account:

Applicants with refugee experience do not begin the regular training immediately. Instead, they start with a preparatory year in which they attend general and occupation-specific German courses three days a week and work at the company for two days. In this way, they are better prepared for the linguistic challenges in practice and at vocational school.

During this preparatory year, your company already pays the apprentices the salary of the regular first year of training. The language support itself is free of charge for your company.

For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company in a direct comparison. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.

**[INSTRUCTIONS for 1/9 of Participants: Mentoring Program Treatment – Version 3.2]**

We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the occupation you have just specified. The individuals include both Germans and refugees.

When deciding on hiring a refugee, please consider the following scenario:

Applicants with refugee experience participate in a mentoring program free of charge for your company for the entire duration of the training. The volunteer experts involved help the apprentices with a refugee background to acclimate to our culture and overcome integration obstacles. Additionally, they support the refugees in dealing with issues at vocational school and in the workplace.

For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company in a direct comparison. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.

**[INSTRUCTIONS for 1/9 of Participants: Automatic 3+2 Rule Treatment – Version 3.3]**

We will now repeatedly show you brief tabular profiles of two individuals who are applying for a potential apprenticeship position in your company for the occupation you have just specified.

The individuals include both Germans and refugees.

When deciding on hiring a refugee, please consider the following scenario:  
Applicants with refugee experience are automatically guaranteed the right to remain and work in Germany for the entire duration of the apprenticeship and for two years thereafter upon completion of the apprenticeship contract.

For each pair, please indicate which of the two individuals you would prefer for an apprenticeship in your company in a direct comparison. Afterwards, we would like to know separately for both candidates whether you would offer that person an apprenticeship position or rather refrain from doing so.

20. **[response]** Which of the two proposed candidates would you choose?
1. Candidate 1
  2. Candidate 2
21. **[Likelihood]** Would you offer Candidate 1 an apprenticeship in your company?
1. Certainly not
  2. Unlikely
  3. Maybe
  4. Likely
  5. Certainly
22. **[Likelihood]** Would you offer Candidate 2 an apprenticeship in your company?
1. Certainly not
  2. Unlikely
  3. Maybe
  4. Likely
  5. Certainly
23. **[Text-Page]** You are almost done! We would like to sincerely thank you for participating in this survey. We only have a few more questions . . .
24. **[ChancesIntegration]** Now we would like to ask you to name the greatest opportunities in training refugees. (Please tick all that apply to your company.)
1. High likelihood that refugees will stay after training
  2. Opening up new customer groups
  3. Positive for the company's reputation

4. Relevant prior knowledge and experience
5. Improvement of the working atmosphere in the company
6. Positive for the further development of the workforce
7. Securing skilled workers
8. Other:

25. **[ProblemsIntegration]** And what are the biggest challenges in training refugees?  
(Please tick all that apply to your company.)

1. Uncertainty regarding the legal status of the applicants
2. Lack of social skills of the applicants
3. Lack of German language skills of the applicants
4. Lack of cognitive abilities of the applicants
5. Lack of state support during training
6. Excessively high training costs
7. Too high a risk of recruitment by competitors of apprenticeship graduates
8. Cultural and social integration
9. Other:

26. **[Position]** In which position do you work for your company?

1. Human Resources Department
2. Administration
3. Management
4. Owner
5. Other

27. **[HiringDecisions]** How many hiring decisions have you made in the last five years?

1. None
2. Between 1 and 5
3. Between 6 and 20
4. More than 20

28. **[Gender]** What is your gender?

1. Female
  2. Male
  3. Diverse
29. **[MigrationBackground]** Do you have a migration background?
1. Yes
  2. No
30. **[OpenComments]** Do you have any comments on individual questions or the survey in general, or would you like to tell us something else?  
*[open-text field]*
31. **[End of Survey Text]** Once again, a heartfelt thank you for your participation! You may now close the browser window. As soon as the results are available, you can view them on the websites of the University of Würzburg and the Institute for Small and Medium-Sized Enterprises Research of the University of Mannheim.

## C.2 German questionnaire

### 1. Betriebliche Ausbildung – Chancen und Herausforderungen

Vielen Dank für die Teilnahme an dieser Studie.

Die Beantwortung der Fragen ist freiwillig. Sie können einzelne Fragen unbeantwortet lassen sowie jederzeit den Fragebogen abbrechen.

Selbstverständlich sind alle Antworten anonym und wir gehen vertraulich mit den erhobenen Daten um.

Wenn Sie damit einverstanden sind, drücken Sie auf den Button „Weiter“:

2. **[IHKHWK]** Zu Beginn möchten wir Ihnen einige allgemeine Fragen über Ihr Unternehmen stellen und später genauer auf den Bereich der betrieblichen Ausbildung eingehen.

Welcher IHK bzw. HWK ist Ihr Unternehmen zugehörig?

1. HWK München-Oberbayern
2. HWK Unterfranken
3. IHK München-Oberbayern
4. IHK Rhein-Neckar
5. IHK Schwaben

6. IHK Stuttgart
  7. IHK Würzburg-Schweinfurt
3. **[IHK....or HWK....]** Bitte geben Sie Ihren Standort an.  
Landkreis/Stadt der jeweiligen Kammer
4. **[BrancheIHK]** In welcher Branche ist Ihr Unternehmen hauptsächlich tätig? [if Q2≥3]
1. Industrie
  2. Bau
  3. Handel
  4. Dienstleistungen
  5. Sonstige
5. **[BrancheHWK]** In welcher Branche ist Ihr Unternehmen hauptsächlich tätig? [if Q2==1 or Q2==2]
1. Bauhauptgewerbe
  2. Ausbaugewerbe
  3. Handwerk für gewerblichen Bedarf
  4. Kraftfahrzeuggewerbe
  5. Lebensmittelgewerbe
  6. Gesundheitsgewerbe
  7. Handwerk für privaten Bedarf
  8. Sonstige
6. **[HRDepartment]** Gibt es in Ihrem Unternehmen eine eigenständige Personalabteilung oder befasst sich zumindest ein\*e Mitarbeiter\*in schwerpunktmäßig mit Personalangelegenheiten?
1. Ja
  2. Nein
7. **[SearchforEmployees]** Ist Ihr Unternehmen aktuell oder in der nächsten Zeit auf der Suche nach neuen Mitarbeiter\*innen?
1. Ja

2. Nein

8. **[ChallengesEmployees]** Vor welchen Herausforderungen steht Ihr Unternehmen aktuell bei der Mitarbeiter\*innensuche? (Kreuzen Sie alle Antworten an, die auf Ihr Unternehmen zutreffen.)

1. Verfügbarkeit von Ausbildungsbewerber\*innen
2. Eignung von Ausbildungsbewerber\*innen
3. Übernahme der eigenen Ausbildungsabsolvent\*innen
4. Verfügbarkeit von Fachkräften
5. Eignung von Fachkräften
6. Verfügbarkeit von Führungskräften
7. Zu hohe Lohnforderungen der Bewerber\*innen
8. Sonstige:
9. Keine

9. **[OvercomeSkillShortage]** Was tut Ihr Unternehmen, um die Herausforderung des Fachkräftemangels zu bewältigen? (Kreuzen Sie alle Antworten an, die auf Ihr Unternehmen zutreffen.)

1. Stärkung der betrieblichen Ausbildung
2. Weiterbildung von Arbeitskräften im Unternehmen
3. Maßnahmen zur Mitarbeiter\*innenbindung
4. Arbeitskräftesuche im Ausland
5. Nutzung von Beratungsangeboten zur Beschäftigung von Geflüchteten
6. Steigerung der Attraktivität des Unternehmens (z.B. höhere Löhne oder flexiblere Arbeitszeiten)
7. Aufstockung des Arbeitspensums bei Teilzeitbeschäftigten
8. Sonstige:
9. Fachkräftemangel stellt derzeit keine Herausforderung dar

10. **[EmployeesNonEU]** Arbeiten in Ihrem Unternehmen Mitarbeiter\*innen aus Ländern, die nicht aus der EU oder mit ihr assoziierten Ländern, z.B. Norwegen, Schweiz, stammen?

1. Ja

2. Nein
11. **[EmployeesRefugees]** Sind darunter Mitarbeiter\*innen mit Fluchthintergrund (Geflüchtete)? [if Q10==1]
1. Ja
2. Nein
12. **[NumberApprentices]** Wie viele Auszubildende haben Sie derzeit insgesamt im Unternehmen?
1. Keine
2. 1
3. 2 – 5
4. 6 – 10
5. Mehr als 10
13. **[WTEmployAppr]** Wollen Sie in den nächsten Ausbildungsjahren Auszubildende einstellen?
1. Ja
2. Nein
14. **[Applications]** Mit wie vielen geeigneten Bewerbungen rechnen Sie im Schnitt pro ausgeschriebener Ausbildungsstelle?
1. Keiner
2. Wenigen
3. Vielen
15. **[CostBenefitAppr]** Rechnet sich für Ihr Unternehmen die betriebliche Ausbildung von Mitarbeiter\*innen finanziell schon während der Ausbildungszeit?
1. Ja
2. Nein
16. **[TakeoverRate]** Wie hoch ist in Ihrem Unternehmen die Übernahmequote von Auszubildenden nach der Ausbildung?
1. Bis zu einem Viertel
2. Zwischen einem Viertel und der Hälfte

3. Zwischen der Hälfte und drei Viertel
  4. Über drei Viertel
17. **[MoreT takeover]** Würde Ihr Unternehmen gerne mehr Auszubildende nach einer erfolgreichen Ausbildung übernehmen?
1. Ja
  2. Nein
18. **[LeavingReasons]** Wenn sich erfolgreiche Ausbildungsabsolvent\*innen gegen einen Verbleib bei Ihnen im Unternehmen entscheiden, was sind Ihrer Meinung nach die ausschlaggebenden Gründe dafür? (Kreuzen Sie alle Antworten an, die auf Ihr Unternehmen zutreffen.)
1. Studium
  2. Suche nach alternativem Arbeitgeber\*in
  3. Angebot eines Konkurrenzunternehmens
  4. Selbstständigkeit
  5. Wegzug
  6. Sonstige:
  7. Trifft nicht zu
19. **[Occup]** Nun geht es um potenzielle Bewerber\*innen auf einen Ausbildungsplatz in Ihrem Unternehmen. Wir möchten gerne verstehen, wer in Ihrem Unternehmen eine Chance auf Einstellung hat. Bitte geben Sie zunächst an, für welchen Beruf Ihr Unternehmen die meisten Auszubildenden einstellt.

*[open-text-answer-field]*

**[INSTRUCTIONS for 1/3 of Participants: Standard Version 1]**

Wir zeigen Ihnen nun wiederholt kurze tabellarische Profile von zwei Personen, die sich auf einen möglichen freien Ausbildungsplatz in Ihrem Unternehmen für den gerade von Ihnen bestimmten Ausbildungsberuf bewerben. Bei den Personen handelt es sich sowohl um Deutsche als auch um Geflüchtete. Geben Sie bitte für jedes Paar an, welche der beiden Personen Sie im direkten Vergleich für eine Ausbildung in Ihrem Unternehmen bevorzugen würden. Anschließend würden wir gerne für beide Kandidat\*innen getrennt wissen, ob Sie der jeweiligen Person eine Ausbildungsstelle anbieten oder eher davon absehen würden.

**[INSTRUCTIONS for 1/3 of Participants: Refugee only Version 2]**

Wir zeigen Ihnen nun wiederholt kurze tabellarische Profile von zwei Personen, die sich auf einen möglichen freien Ausbildungsplatz in Ihrem Unternehmen für den gerade von Ihnen bestimmten Ausbildungsberuf bewerben.

Bei den Personen handelt es sich um Geflüchtete, da diese eine potenziell wichtige Quelle an Arbeitskräften darstellen.

Geben Sie bitte für jedes Paar an, welche der beiden Personen Sie im direkten Vergleich für eine Ausbildung in Ihrem Unternehmen bevorzugen würden. Anschließend würden wir gerne für beide Kandidat\*innen getrennt wissen, ob Sie der jeweiligen Person eine Ausbildungsstelle anbieten oder eher davon absehen würden.

**[INSTRUCTIONS for 1/9 of Participants: 1+3 Language Program Treatment – Version 3.1]**

Wir zeigen Ihnen nun wiederholt kurze tabellarische Profile von zwei Personen, die sich auf einen möglichen freien Ausbildungsplatz in Ihrem Unternehmen für den gerade von Ihnen bestimmten Ausbildungsberuf bewerben. Bei den Personen handelt es sich sowohl um Deutsche als auch um Geflüchtete. Bei der Entscheidung über die Einstellung eines Geflüchteten berücksichtigen Sie bitte folgendes Szenario:

Bewerber\*innen mit Fluchterfahrung beginnen nicht sofort mit der regulären Ausbildung. Stattdessen starten sie mit einem vorgeschalteten Jahr, in dem sie an drei Tagen in der Woche allgemeine und berufsfachspezifische Deutschkurse absolvieren und an zwei Tagen im Betrieb arbeiten. Auf diese Weise sollen sie besser auf die sprachlichen Herausforderungen in der Praxis und an der Berufsschule vorbereitet werden.

Während dieses vorgeschalteten Jahres zahlt Ihr Unternehmen den Auszubildenden bereits das Gehalt des regulären 1. Jahrs der Ausbildung. Die Sprachförderung selbst ist für Ihr Unternehmen kostenlos.

Geben Sie bitte für jedes Paar an, welche der beiden Personen Sie im direkten Vergleich für eine Ausbildung in Ihrem Unternehmen bevorzugen würden. Anschließend würden wir gerne für beide Kandidat\*innen getrennt wissen, ob Sie der jeweiligen Person eine Ausbildungsstelle anbieten oder eher davon absehen würden.

**[INSTRUCTIONS for 1/9 of Participants: Mentoring Program Treatment – Version 3.2]**

Wir zeigen Ihnen nun wiederholt kurze tabellarische Profile von zwei Personen, die sich auf einen möglichen freien Ausbildungsplatz in Ihrem Unternehmen für den gerade von Ihnen bestimmten Ausbildungsberuf bewerben. Bei den Personen handelt es sich sowohl um Deutsche als auch um Geflüchtete.

Bei der Entscheidung über die Einstellung eines Geflüchteten berücksichtigen Sie bitte folgendes Szenario:

Bewerber\*innen mit Fluchterfahrung nehmen für die gesamte Dauer der Ausbildung an einem für Ihr Unternehmen kostenfreien Mentorenprogramm teil. Die darin tätigen ehrenamtlichen Expert\*innen helfen den Auszubildenden mit Fluchthintergrund, in unserer Kultur anzukommen und Integrationshindernisse zu überwinden. Außerdem unterstützen sie die Geflüchteten bei der Bewältigung von Problemen in der Berufsschule und im Betrieb.

Geben Sie bitte für jedes Paar an, welche der beiden Personen Sie im direkten Vergleich für eine Ausbildung in Ihrem Unternehmen bevorzugen würden. Anschließend würden wir gerne für beide Kandidat\*innen getrennt wissen, ob Sie der jeweiligen Person eine Ausbildungsstelle anbieten oder eher davon absehen würden.

**[INSTRUCTIONS for 1/9 of Participants: Automatic 3+2 Rule Treatment – Version 3.3]**

Wir zeigen Ihnen nun wiederholt kurze tabellarische Profile von zwei Personen, die sich auf einen möglichen freien Ausbildungsplatz in Ihrem Unternehmen für den gerade von Ihnen bestimmten Ausbildungsberuf bewerben.

Bei den Personen handelt es sich sowohl um Deutsche als auch um Geflüchtete.

Bei der Entscheidung über die Einstellung eines Geflüchteten berücksichtigen Sie bitte folgendes Szenario:

Bewerber\*innen mit Fluchterfahrung erhalten bei Abschluss des Ausbildungsvertrags automatisch die Garantie, für die gesamte Ausbildungszeit und zwei Jahre danach in Deutschland bleiben und arbeiten zu können.

Geben Sie bitte für jedes Paar an, welche der beiden Personen Sie im direkten Vergleich für eine Ausbildung in Ihrem Unternehmen bevorzugen würden. Anschließend würden wir gerne für beide Kandidat\*innen getrennt wissen, ob Sie der jeweiligen Person eine Ausbildungsstelle anbieten oder eher davon absehen würden.

20. **[response]** Für welche\*n der beiden vorgeschlagenen Kandidat\*innen würden Sie sich entscheiden?
1. Kandidat\*in 1
  2. Kandidat\*in 2
21. **[Likelihood]** Würden Sie Kandidat\*in 1 eine Ausbildung in Ihrem Unternehmen anbieten?
1. Sicher nicht
  2. Unwahrscheinlich
  3. Vielleicht
  4. Wahrscheinlich
  5. Sicher
22. **[Likelihood]** Würden Sie Kandidat\*in 2 eine Ausbildung in Ihrem Unternehmen anbieten?
1. Sicher nicht
  2. Unwahrscheinlich
  3. Vielleicht
  4. Wahrscheinlich
  5. Sicher
23. **[Text-Page]** Sie haben es gleich geschafft! Schon jetzt möchten wir uns recht herzlich für die Teilnahme an dieser Umfrage bedanken. Wir haben nur noch wenige Fragen ...
24. **[ChancesIntegration]** Nun möchten wir Sie bitten, die größten Chancen bei der Ausbildung von Geflüchteten zu benennen. (Kreuzen Sie alle Antworten an, die auf Ihr Unternehmen zutreffen.)
1. Hohe Bleibewahrscheinlichkeit der Geflüchteten nach der Ausbildung
  2. Erschließung neuer Kundengruppen
  3. Positiv für die Reputation des Unternehmens
  4. Relevante Vorkenntnisse und -erfahrungen
  5. Verbesserung der Arbeitsatmosphäre im Unternehmen
  6. Positiv für die Weiterentwicklung der Belegschaft

7. Fachkräftesicherung

8. Sonstiges:

25. **[ProblemsIntegration]** Und was sind die größten Herausforderungen bei der Ausbildung von Geflüchteten? (Kreuzen Sie alle Antworten an, die auf Ihr Unternehmen zutreffen.)

1. Unsicherheit bzgl. des rechtlichen Status der Bewerber\*innen

2. Mangelnde soziale Fähigkeiten der Bewerber\*innen

3. Mangelnde Deutschkenntnisse der Bewerber\*innen

4. Mangelnde kognitive Fähigkeiten der Bewerber\*innen

5. Fehlende staatliche Unterstützung während der Ausbildung

6. Zu hohe Ausbildungskosten

7. Zu hohe Gefahr der Abwerbung von Ausbildungsabsolventen

8. Kulturelle und soziale Integration

9. Sonstiges:

26. **[Position]** In welcher Position sind Sie für Ihr Unternehmen tätig?

1. Personalabteilung

2. Verwaltung

3. Geschäftsführung

4. Eigentümer\*in

5. Sonstiges

27. **[HiringDecisions]** Wie viele Einstellungsentscheidungen haben Sie während der letzten fünf Jahre getroffen?

1. Keine

2. Zwischen 1 und 5

3. Zwischen 6 und 20

4. Mehr als 20

28. **[Gender]** Welches Geschlecht haben Sie?

1. Weiblich

2. Männlich

3. Divers

29. **[MigrationBackground]** Haben Sie einen Migrationshintergrund?

1. Ja
2. Nein

30. **[OpenComments]** Haben Sie noch Kommentare zu einzelnen Fragen oder der Umfrage allgemein oder wollen Sie uns noch etwas anderes mitteilen?

*[open-text field]*

31. **[End of Survey Text]** Noch einmal ein herzliches Dankeschön für Ihre Teilnahme! Sie können das Browserfenster jetzt schließen. Sobald Ergebnisse vorliegen, können Sie diese auf den Seiten der Universität Würzburg und des Instituts für Mittelstandsforschung der Universität Mannheim einsehen.