

Refugees' willingness to invest in host-country specific skills – Evidence from a discrete-choice experiment in Germany *

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Abstract: Labor market integration has been emphasized to be crucial for economic and social inclusion of refugees into host countries, but many refugees lack the relevant skills. In this paper, we shed light on refugees' willingness to participate in vocational training and thus, to undertake an investment that opens doors to a well-paid, stable job. To this end, we conduct a discrete-choice experiment with 1,279 refugees in Germany. This empirical method allows eliciting an unbiased measure of refugees' willingness to participate in vocational training and identifying important barriers preventing refugees from doing so. We find that refugees' willingness to participate in training lies significantly below widely cited survey-based numbers, in particular when confronted with concrete training positions. Financial constraints and the length of training programs constitute the biggest hurdles for refugees to participate in training, yet there is much heterogeneity across socio-demographic backgrounds. Allowing for more flexible training schemes in terms of length and schooling requirements, has the potential to attract substantially more refugees.

JEL Codes: C93, J24, J61.

Keywords: Labor market integration, human capital, refugees, apprenticeship, discrete-choice experiment.

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I. INTRODUCTION

Europe has recently experienced an unprecedented inflow of refugees. Between 2014 and 2018, more than 4.2 million people filed an application for asylum in one of the 28 EU member states [OECD, 2020]. Labor market integration has been emphasized to be crucial for economic and social inclusion of refugees into host countries [Dustmann *et al.*, 2017; Hatton, 2017]. Yet, employment rates of refugees bob around low levels, even several years after arrival to the host country [Bevelander, 2016; Dustmann *et al.*, 2017]. Moreover, if working, refugees mostly do so in precarious jobs [Arendt, 2020].

Successful and sustainable labor market integration requires locally applicable human capital. Refugees are likely to lack thereof when arriving to the host country [Brell *et al.*, 2020; Brücker *et al.*, 2019]. In light of rather low costs and high rates of return, refugees should theoretically be inclined to undertake host country-specific human capital investments. The high share of refugees stating their willingness to pursue vocational training or further education, which amounts in Germany, for instance, to 68% [Brücker *et al.*, 2019], supports this notion. Yet, there may be several reasons why refugees ultimately abstain from doing so, most prominently financial needs and uncertainty about the length of stay [Brell *et al.*, 2020].¹ Considering that at the end of 2017 only 8% of all refugees in Germany had enrolled either in vocational training or further education [Brücker *et al.*, 2019], these reasons are likely of great importance in refugees' decision-making process.

In this paper, we examine refugees' willingness to participate in vocational training and investigate the main barriers preventing refugees from actually doing so. Our focus lies on Germany, one of the most popular refugee destination countries worldwide and internationally renowned for its vocational training system. Vocational training combines professional practice with theory taught at school. During the 3-year training period trainees receive a fixed salary, which allows them to finance their subsistence and to cover eventual liabilities. Formal entry criteria into vocational training are modest and as such do not represent major barriers for refugees. Most importantly, vocational training leads to a high-quality and respected degree opening doors for a permanent, well-paid job [Wolter and Ryan, 2011].

Vocational training requires an apprenticeship position with an employer. Therefore, refugees need to apply for available vacancies. Administrative data on the actual number of refugees enrolled in vocational training are thus an equilibrium outcome between labor supply and labor demand decisions and likely hide refugees' limited application behavior and employer discrimination. Survey data eliciting refugees' willingness to participate in vocational training and the barriers preventing them from doing so likely suffer from social desirability bias.

We overcome these challenges by relying on a discrete choice experiment (DCE). Specifically, we implement a DCE in a large-scale refugee survey (ifm refugee survey) – a unique dataset on 1,279 asylum seekers in Germany in 2018 – and ask survey participants to decide between various vocational training positions and an alternative unskilled job. The advantage of such an experimental approach is that it allows us to disentangle refugees' decisions from firms' hiring decisions and to confront refugees with a large array of available vocational training positions. As such, we can abstract from refugees' non-random

¹Upon arrival, refugees are likely to have accumulated debt to finance their flight. Moreover, at first it is uncertain whether asylum will be granted, and even if it is, permission to stay may be explicitly temporary and subject to periodic reassessment with the possibility of revocation.

application behavior and possible employer discrimination. Randomizing key features of the vocational training positions as well as the alternative unskilled job allows us to causally identify the main barriers preventing refugees from investing into human capital.² Our focus lies on the financial components, which we model via alternative levels of forgone wages and post-training wages, and on the flexibility of the training program in terms of length, schooling component and language support. Our results are therefore meaningful for both firms and policymakers alike.

DCEs are frequently criticized for their hypothetical nature [Mas and Pallais, 2017]. We address this critique by confronting refugees with close to real apprenticeships. Specifically, we draw upon the pool of available training positions in 2018 and offer survey participants a hypothetical vocational training position for two alternative occupations in sectors with distinct skill shortage, specifically in the craft and the care sector. We then randomize the future monetary return to vocational training in the respective occupations (using the average salary paid in these occupations in 2018 as baseline) or the opportunity costs of the training (i.e., the salary paid in the unskilled position). We also randomly implement two, highly debated, policy options that allow for a more flexible vocational training, specifically a short-track with a reduced theory load and a long-track with an additional, paid, one-year, occupation-specific language program.

Our results are as follows. First of all, when offered a concrete apprenticeship including detailed information on its costs and benefits, refugees' willingness to start vocational training lies significantly below their self-reported general willingness. While 78.9% of all survey participants state general interest in vocational training, only 61.1% and 52.3% opt for vocational training when offered a concrete position in the craft (as electrician) or the care sector (elderly care nurse), respectively. This difference may in part be due to the fact that refugees lack the skills and the willingness to work under conditions requested by the occupations where skilled labor is short. For instance, an elderly care nurse needs to care for people and carry out physically demanding tasks. In our sample, only a third is willing to engage in care and less than half in physically demanding work.

Second, manipulating the costs and benefits of vocational training influences refugees' investment decision, but effect sizes are modest. Increasing the financial returns and thus the post-training salary by roughly 45% (or Euro 600) increases refugees' willingness to attend vocational training by 3.9 percentage points or 7.8%. A fast-track vocational training with reduced schooling increases the willingness by 3.4 percentage points or 6.8%. Offering support in terms of occupation-specific language training leaves refugees' willingness largely unchanged.

Third, targeting measures to specific subgroups seems to be a powerful policy tool. For instance, financial constraints constitute the decisive factor for men: a 45% post-training salary rise increases men's willingness by 5.3 percentage points or 10.8%. A fast-track program with reduced theory load boosts women's decision (by 9.3 percentage points or 17.8%). A fast-track program represent also an adequate policy measure for refugees with prior educational training and for refugees awaiting the asylum decision (their willingness rises by 27.5% and 24.6%, respectively). Once asylum is granted, the financial aspect matters most and the same is true for refugees who are proficient in German: an increase in the

²In contrast to a classical survey or a vignette study, a DCE further minimizes the risk of social desirability bias as it forces the participant to decide between options which do not differ in terms of social acceptance. This forced choice approach has proven to elicit decisions most closely related to similar decisions in the reality [Hainmueller *et al.*, 2015]

post-training salary by 45% raises the willingness by 6.6 percentage points (13.6%) and 11.0 percentage points (22.8%), respectively. Finally, allowing refugees to flexibly choose between different tracks of vocational training – a 2-year-track with a reduced schooling component, the standard 3-year track, and a 4-year track which includes a one-year, paid, occupation-specific language course – has the potential to substantially increase refugees’ willingness to participate in vocational training (by 10.5% on average, and for some subgroups, such as college educated women, by even more than 100%).

Our paper contributes to a small, but growing literature on the economic integration of refugees (see Dustmann *et al.* [2017] and Hatton [2017] for an overview). It sheds novel light on refugees’ willingness to invest in host country-specific human capital using an experimental approach. The chosen approach allows us to overcome limitations of traditional surveys, in particular social desirability bias and thus an unreflected, or even more problematic, strategic affirmation to be willing to undertake host country-specific human capital investments. Confronting refugees with a concrete choice under enhanced information enables us to get a more realistic picture about how to address actual challenges of refugees’ labor market integration.

The remainder of the paper is structured as follows: Section 2 provides information on the economic situation of refugees in Germany, describes the vocational training system, and discusses the theoretical arguments entering refugees’ decisions whether to invest into host-country specific human capital. Section 3 describes the data collection and the experimental design. Section 4 provides our results, where we concentrate first on the impact of financial incentives and then on the power of the alternative, more flexible schemes of the vocational training. Section 5 concludes with some policy recommendations and suggestions regarding further research avenues related to the labor market integration of refugees.

II. BACKGROUND

Our knowledge on refugees’ labor market integration is still scarce. Extrapolating from studies on immigrants’ integration to the situation of refugees is doomed to fail given the stark differences between the two groups, for instance, in terms of preparedness, certainty to stay in the host-country and/or desire to return to their home country [Brell *et al.*, 2020]. Work-first policies, the integration approach that dominates in many integration destinations, push refugees into unskilled, poorly paid jobs [Arendt, 2020]. Yet, how to get refugees to invest into training and further education and thus to acquire host-country specific skills is still an open question.

There is first evidence on the effectiveness of job search assistance programs offered to refugees. Battisti *et al.* [2019] evaluate a randomized control trial in which an NGO in Germany supported refugees in writing their CV and randomly referred them to trusted employers. They find that job search assistance is an effective tool to integrate and promote refugees in the host-country labor market. Caria *et al.* [2020] confirm this result for an enhanced job search assistance program in Jordan, which provided refugees with information about the interview process and the legal obligations, financial and psychological support during their job search.

This study examines refugees’ willingness to invest into training that opens doors for a stable, well-paid job. Thus, in contrast to the two previous studies it focuses on all refugees, also those not yet actively

searching for work. In fact, its objective is to identify the barriers preventing refugees from undertaking such investments and to examine ways how to lift these barriers. It therefore provides valuable guidance for an evidence-based design of so-called education-first policies that are meant to act as a catalyzer for refugees' successful and sustainable labor market integration. Given that this study focuses on Germany, the next subsections provide an overview of the labour market conditions refugees encounter in Germany, discuss the theoretical arguments entering refugees' human capital investment decisions and describe the German vocational training system, an ideal setting to study refugees' human capital investment decisions.

II.A. The Labor Market Situation of Refugees in Germany

Between 2014 and 2018 Germany experienced an unprecedented inflow of refugees. More than 1.5 mio refugees applied for asylum, leaving firms and policy makers alike with the challenge of integrating refugees who were largely unexperienced and unprepared for joining the German labor market. In what follows, we provide a short summary of refugees' situation in Germany shortly after the refugee crisis, and thus the time when this study was conducted. For a more comprehensive overview please refer to Brücker *et al.* [2019].

From a legal perspective, refugees are allowed to join the labor market three months after arrival (during the first three months after the asylum application they are under a work ban). Yet, only few refugees engage in the labor market. By the end of 2017, 27 % of all male refugees and only 6 % of female refugees were working. Employment rates among refugees with children were even lower: among male refugees with children only 18% were employed, and among their female counterparts only 3%. Interestingly, refugees still awaiting their asylum decision are more likely to work than refugees with a positive asylum decision. However, they do so in unskilled, poorly paid jobs indicating the financial pressure on their shoulders. Refugees relying on job search assistance provided by the official employment agencies take a longer to find a suitable job, but end up in more qualified, better paying positions.

An often-cited barrier to a stable, well-paid job is the lack of an appropriate educational and/or occupational degree. In fact, many refugees lack any formal credentials, either because they left their home country before finishing a formal degree or because they lost the documents before/during their flight [OECD, 2016]. The relevance of formal recognition of educational degrees cannot be underestimated. Brücker *et al.* [forthcoming], for instance, show that recognition of an educational degree leads to an increase of immigrants' employment prospects by 25% and their earnings' by 20%. Recognition of an occupational degree leads to a full closure of the earnings gap between immigrants and their native counterparts.

II.B. Refugees and Human Capital Investments

What drives refugees' decision to invest into host country-specific human capital? People with a foreign background are likely to base their human capital investment decisions on aspects that go beyond the ones considered native people. Duleep and Regets [1999] offer an in-depth analysis of human capital investment decisions by migrants. Based on this seminal study, we hypothesize refugees' human capital investment

decisions to follow three key considerations. Analogue to the seminal human capital investment model by Becker [1962], the costs and the benefits of an investments are crucial for the investment to be undertaken. First, the lower the costs, the higher the propensity to invest. The costs also extend to the opportunity costs and thus to the wages paid in alternative, unskilled jobs. Second, the higher the returns, the higher the propensity to invest. As a result, the prospect of high post-training wages are likely to raise the odds of investing into training. The horizon for which these higher wages are paid also matters for the decision to undertake the investment. In the case of refugees, this implies not only that the age at arrival matters, but also the asylum decision and thus the certainty to stay. Another aspect which only applies to people with a foreign background, is the extent to which they have acquired skills that can be easily transferred and applied to the host country's labor market. In case of transferrable skills, refugees are likely to catch up quickly to natives, also without additional training, and as such, the expected relative returns are lower. In case refugees initially lack of skills that are applicable to the host country's labor market, training may require more effort, but ultimately pays off more.

These theoretical considerations together with the economic situation of refugees in Germany described above, lead us to establish several hypotheses that guide our experimental design (described in the next section). First, the willingness to invest into training likely varies across refugees from different sociodemographic backgrounds. We expect women, in particular women with children, to exhibit a lower willingness to invest in host-country specific human capital, given that they are overall less willing to work. Refugees still awaiting the asylum decision or refugees without asylum are likely to look for immediate opportunities to earn money, instead of investing and reaping the benefits only later on. Once granted asylum, refugees should be more inclined to invest into host-country specific skills, not at last because of the prolonged horizon. Refugees with prior education are less pressured to acquire further education and use vocational training, if anything, as a stepping stone into the labor market. Predictions are unclear for refugees without transferrable skills, as the relatively higher effort and the relatively higher returns to investment may offset each other. Second, we can hypothesize about the extent to which costs and benefits of the investment deter refugees from investing into human capital and how the effects may vary across refugees from different socioeconomic backgrounds. Starting with the costs, we expect that attractive financial opportunities in temporary, unskilled jobs induce refugees to decline investment opportunities and start working immediately. This might be particularly true for male refugees, in particularly with care obligations, but also for refugees awaiting or having been declined asylum. Refugees with less initial skills or educational/occupational degrees who dislike the additional effort require to complete the training, may also be inclined to accept an attractive outside offer. Turning to the benefits of investment, the prospect for a well-paid job in the future, we expect them to matter most for refugees with fewer financial constraints, and thus for male refugees without care obligations, and for refugees being granted asylum, and thus enjoying certainty to stay in the host country. The burden to attend school and study for theoretical exams constitutes an additional burden, which weighs particularly heavy for the less skilled ones and the ones that lack proficiency in the German language.

In the next section, we describe the German vocational training system which offers an ideal setting to investigate refugees' willingness to invest into host country-specific human capital and to identify the barriers preventing refugees from undertaking this investment.

II.C. The German Apprenticeship System

In Germany, vocational training is generally perceived as the gold standard for successful and sustainable labor market integration. The standard vocational training lasts three years and combines practical training in a firm (two years) with theoretical learning in a centralized school (one year). Entry requirements are rather low (completed compulsory schooling or an equivalent of that). The firm pays the trainee a stable salary throughout the whole training period, which amounts 900 Euro per month on average over all sectors (Nonetheless, there exists quite some variation. In a vocational training to become an electrician, the average income is about 800 Euros). After the three-year training periods, trainees need to pass a centralized exam, consisting of both a practical and a theoretical part. Successful completion grants an occupational certificate opening doors to a prestigious, stable and well-paid job. In the case of refugees, successful completion has the additional advantage of granting them two further years in Germany, independently of their legal status. This regulation is also known as the *3+2 regulation*, which was designed to reduce uncertainty for both the refugees and the employers.

There exist some alternative versions in addition to the standard training program that are designed to relax some of the burdens and the challenges frequently preventing people from applying for a vocational training. For instance, there exists a shortened training program lasting two years only and leading to an assistant degree (also known as the *Helpferausbildung*). Given its shorter duration and reduced theory load, this program may be particularly attractive to refugees. In addition, there are several pilot projects offering migrants and refugees an extended training program lasting four years during and offering them a simultaneous occupation-specific language training. One exemplary pilot project is the *Coburger Modell*. These projects are designed to support migrants and refugees in case of language difficulties while granting them financial independence (trainees receive their monthly compensation throughout the whole training period).

III. SURVEY AND EXPERIMENTAL DESIGN

III.A. The ifm Refugee Survey 2018

This paper builds on a novel data set on recent asylum seekers to Germany – the ifm Refugee Survey. In 2018, the state government of Baden-Württemberg, one of the biggest and most popular refugee destination states in Germany, commissioned the ifm, a research center for small and medium sized companies and entrepreneurship at the University of Mannheim, to ~~generate~~ a comprehensive overview on the labor market integration of refugees. For this purpose, the ifm collaborated with the local authorities supervising the public, largely centralized refugee accommodation centers. Sampling followed a two-step procedure: first, **they** chose two to three districts within each of the four administrative regions; second, **they** contacted all medium- to large-size refugee accommodation **centers** (hosting between 20 and 200 refugees) and asked them to ~~participate in~~ the survey. ~~Basically~~ all refugee accommodations agreed to ~~participate~~ with the exception of a few centers that ~~had recently~~ experienced **a** complete turnover of their residents or a turmoil due to a highly publicized dispute between refugees with African background and

the police. Given the quasi-random allocation of refugees across states and districts in Germany,³ this clustered sampling approach allowed reaching a representative sample of refugees.

In agreement with the managers of the accommodation centers or the social workers in charge, the ifm elaborated an interview schedule and advertised the survey in advance via multi-language posters in the community areas of the refugee accommodation centers.⁴ A multi-ethnic, mixed-gender interviewer team, consisting of up to five men and women from various Middle Eastern and African countries, visited all refugee accommodation centers over a period of three months (Mid-April to Mid-July 2018). Interviews took place in the late afternoon and early evening to ensure participation of all residents, independently of their working status or participation in integration or language courses. Recruitment of the participants occurred in the public and community areas of the accommodation centers. In addition, interviewers looked for all remaining residents by knocking doors of the private rooms and inviting personally to the study. The interviews were conducted as computer-assisted personal interviews (CAPI) and lasted between 25 and 60 minutes. The questionnaire was available in Arabic, Persian and English which allowed reaching roughly 80% of all refugees in the sampled refugee accommodation centers. Given the statistics provided by the local authorities and the centers managers the final participation rate amounted to approximately half of the sampled population.

The survey consisted of two parts: a traditional questionnaire and an experimental part eliciting refugees' willingness to invest in vocational training.⁵ The questionnaire elicited the refugees' knowledge about the German labor market, their expectations regarding possible jobs offers, their language and professional skills relevant for the German labor market, their job search activities and their main problems therein. In addition, participants provided basic information on their migration history, asylum process, education and professional experience accumulated in the home country and socio-demographic background.

The final sample consisted of 1,279 refugees and was largely representative for the refugees present in 2018 in Germany. Table 1 contains some descriptive statistics of our sample and compares it with the sample of the IAB-BAMF-SOEP survey, the most well-known refugee survey in Germany. The sample, like the actual refugee population, is predominantly male (75.8%) and are on average 31.3 years old. About 44% are either married or in a relationship and the number of children are on average 1.2. The ethnic composition of the refugees in the ifm covers refugees from the Middle East, in particular from Syria (22.5%), Afghanistan (16.3%), Iraq (13.8%) and Iran (6.0%), and from Northern Africa, in particular from Gambia (12.9%). Note that this distribution differs from the actual ethnic composition, which comprises more refugees from Syria (43.0%). This difference can be explained by the German federal states being responsible for different ethnic groups. Regarding the education of the refugees in the ifm Refugee Survey, the average years of schooling are about 9.6 years.

³In Germany, refugee allocation occurs according to the so-called "Königsteiner Schlüssel" which determines the quota of refugees according to the regional population size and tax income

⁴The posters only contained general information advertising a multi-purpose survey on the general conditions of the refugees.

⁵For details on the experiment, please refer to the next subsection.

Table 1: Comparison of the population of refugees across two different data sets

	ifm Refugee Survey 2018 Baden-Württemberg	IAB-BAMF-SOEP 2018 Baden-Württemberg	IAB-BAMF-SOEP 2018 Germany
Personal Characteristics			
Female	0.242	0.250	0.298
Age in Years	31.3	31.0	31.8
Married/Partnership	0.436	0.415	0.475
No. of Children	1,162	1,220	1,278
Years of Schooling	9,6	9,6	9,9
<i>Country of Origin</i>			
Syria	0,225	0,407	0,426
Afghanistan	0,163	0,151	0,151
Iraq	0,138	0,096	0,102
Iran	0,060	0,009	0,026
Gambia	0,129	0,064	0,010
Nigeria	0,104	0,015	0,019
Other African Countries	0,115	0,102	0,132
Other Countries	0,066	0,156	0,134
Situation in Germany			
Years since Arrival	2,3	3,0	3,0
<i>Asylum Application</i>			
Pending	0,206	0,252	0,156
Approved	0,422	0,675	0,750
Rejected	0,373	0,073	0,093
Private Apartment	0,031	0,625	0,743
Some work in last 7 days	0,260	0,460	0,354
Number of Observations	1,279	457	4,184

NOTES:

III.B. The Discrete Choice Experiment

We introduced in the ifm Refugee Survey a Discrete Choice Experiment (DCE) which is a choice framework designed to elicit refugees' willingness to participate in a vocational training. A DCE is an extension of the contingent valuation literature whereby rather than directly asking people for valuations over an attribute (the stated preference method), people are given the choice between two or more scenarios and are then asked to choose their preferred option [Mas and Pallais, 2017]. The scenarios usually vary in some attributes which allow to flexibly back out the key determinants underlying people's choices and their latent preferences. We confront survey participants with a choice between a vocational training and an unqualified job. We vary the job offers in a number of features highlighted by the classical human capital investment theory by Becker [1962] and applied to the case of immigrants by Duleep and Regets [1999], including the portability of the acquired skills, the financial returns, the opportunity costs and the length of the training.

A frequent critique of this experimental approach is whether it captures actual market behavior or whether the choice is fully hypothetical and as such, the interviewer participants are indifferent and do not possess clear preferences regarding the offered options [Diamond and Hausman, 1994]. This critique can be overcome by designing the survey-based choice experiments with vignettes that closely resemble actual market choices [Mas and Pallais, 2017]. Our choice experiments mimic the daily routine for most of the survey participants. More than half are not working and are actively looking for a job. Among

those who are working, most are only working in a temporary position and still need to settle in a more permanent job. In their job search, they receive support from caseworkers working at the job centers who regularly provide them with announcements of job vacancies. We asked them to make a decision under two scenarios: in the first scenario, they had to decide between option (A) a position as an unqualified assistant in the cleaning, construction or service sector and option (B) a vocational training position in the craft sector, specifically as an electrician; in the second scenario, option (B) corresponded to a training position in the care sector, specifically as an elderly care nurse. Importantly, both sectors, the craft and the care sector suffered from a severe shortage of skilled labor. As a result, caseworkers frequently forward announcements of vacancies available in one of these sectors to the refugees. Our vignettes thus likely resemble real market transactions. Furthermore, all chosen wages are based on actual averages for each sector, and are thus resembling real job offers. Table 2 illustrates exemplary such a choice for the first scenario when facing the decision between a job as an unqualified assistant or a vocational training position as an electrician. Note that we display all attributes that are subject to randomization in bold.

Table 2: The Selection of Jobs in the DCE

<p>Option A: A job as an assistant worker in a restaurant, cleaning, or construction. This job starts immediately and you earn about 1000[Attribute 1] Euros per month.</p>	<p>Option B: A vocational training to become an Electrician[Scenario 1]. The training starts immediately and lasts 3 years [Attribute 3]. During this time, you work two thirds of your time in the company and spend one third in school. If you do well at the job, you get the official degree as "Electrician" [Related to Attribute 3] at the end. During the 3 years [Attribute 3] of the training, you earn 800 Euros per month. You have the certainty to stay and work at least 2 years in Germany after the completion of the training. During this time you will earn 1300 [Attribute 2] Euros per month.</p>
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Both vignettes correspond to realistic job vacancies available during the interview period. We randomly alter these vignettes in three key attributes: [Attribute 1] the salary paid by the alternative assistant position; [Attribute 2] the post-training salary; and [Attribute 3] flexibility in the training scheme. Table 3 below displays the alternative values that each attribute can take.

The first two attributes are purely monetary and represent the opportunity cost of taking up a vocational training position [Attribute 1] and the financial returns to the vocational training [Attribute 2]. Attribute 3 corresponds to the length and thus to the type of vocational training. Our baseline scenario is the three-year standard vocational training. This program leads to the official degree as "Electrician/Elderly Care Nurse". In case of prior application, a 3 year long vocational training entitles the refugee moreover to stay and work in the company for another 2 years after completing the vocational training. Note that this rule applies independently of the legal status of the asylum application and is known as the so-called "3+2" regulation. As we have already discussed in section II.B., refugees might run into some obstacles and thus are not willing to start a vocational training. These obstacles might be financially, lack in German proficiency or the theoretical load of a full vocational training. Thus we implement two potential policy options: a 2 year long vocational training, after which one receives the official degree as "Assistant Electrician/Elderly Care Nurse"; a 4 year long training program corresponds formally to the 3 year long training program, but is preceded by a one year specialized language course.

Table 3: Description of the Main Treatments

	Attribute	Value	Obs.
Attribute 1	Alternative Salary	Baseline: 1000€ Alternative 1: 1500€	1,209 1,209
Attribute 2	Post-Training Salary	Baseline: 1300€ Alternative 1: 1900€	1,235 1,183
Attribute 3	Flexible Training Schemes	Baseline: Standard vocational training = 3 years leading to a degree as "Electrician/Elderly Care Nurse" and granting the right to stay for 2 more years; Alternative 1: Short-Track: 2 years leading to a degree as "Assistant Electrician/Assistant Elderly Care Nurse". During this time, you would work and get your training exclusively in a company; you will not have the certainty of staying 2 years in Germany after completion of the training. Alternative 2: Long-Track: 4 years out of which the first year is a specialized language course ;	798 805 815

To keep the cognitive load minimal, we confront each survey participant with two choice scenarios, one where she/he has to decide between an assistant job and a vocational training as electrician and another one where she/he has to decide between an assistant job and a vocational training as elderly care nurse. The specific values for the three attributes are randomly assigned. As can be seen in Table 3, the different values are roughly equally represented. Table A.1 in the Appendix provides evidence for a successful balancing. It shows the difference in the mean values for the complete array of control values between the baseline and the alternative value of the three different attributes alternative salary, post-training salary and length of the training (baseline 2 years versus 3 years shown in column (3) and baseline 2 years versus 4 years shown in column (4)). Out of 112 comparisons, we reject the null hypothesis of no difference between being assigned a different value for the various attributes, three times at the 5% level and three times at the 10% level significance. Note that this amount lies below the cases expected as statistical artifacts.

~~The advantage of such an experimental approach is that it allows us to disentangle refugees's decision-making process from firms' hiring decisions and to confront refugees with a large array of available vocational training positions. As such, we can abstract from employer discrimination and non-random application behavior of refugees. Randomizing the key features of the vocational training positions as well as the alternative unskilled job allows us to causally identify the main barriers preventing refugees from investing into human capital ⁶. Our focus lies on the financial components, which we model via alternative levels of forgone wages and post training wages, and on the flexibility of the training program in terms of length, educational load and language support. Our results are therefore meaningful for both firms and policymakers alike.~~

⁶In contrast to a classical survey or a vignette study, a DCE further minimizes the risk of social desirability bias as it forces the participant to decide between options which do not differ in terms of social acceptance, see Hainmueller *et al.* [2015]

IV. RESULTS

In this section we describe three sets of results: first, we contrast refugees' self-reported willingness to invest in vocational training with their investment decision when confronted with a realistic offer and detailed information on the actual training modalities (see Section IV.A.). We further provide possible explanations for this gap including the match quality between refugees' skills and expectations and the modalities and requirements by actual job vacancies. Second, we discuss the results of the DCE detail, which allows us to make causal predictions to which extent changing the modalities, in particular the cost and the benefits of vocational training, would impact refugees' willingness to invest in host-country specific human capital.

IV.A. Subjective Willingness to Invest versus Informed Choice

In light of the severe shortage of skilled labor, refugees have been put forward as one potential untapped source to fill this gap. When trusting statistics based on well-known surveys, such as the IAB-BAMF-SOEP refugee survey, refugees are likely to fulfill this hope: 68% state to be willing to further invest into education. The ifm Refugee Survey corroborates this finding: 78.6% of all interviewees report to be willing to take up a vocational training (see Table 4). This fact holds true for all subgroups, male and female, for refugees from all countries of origin, independently of the individual status of the asylum process, and across all education levels.

Eliciting refugees' willingness to start a vocational training when providing them with complete information about actual vacancies uncovers a quite different picture. Column 2 and 3 in Table 4 display the predicted means resulting from the DCE when asking refugees to decide whether or not to take up a vocational training as an electrician or an elderly care nurse. Once the refugees have to weigh cost and benefits of a specific vocational training position, the willingness drops significantly from 78.6% to 61.1% for a vocational training as an electrician and to 52.3% for a vocational training as an elderly care taker. Splitting the analysis by gender reveals that this drop in the willingness to invest into a vocational training is particularly stark for women among which only 47% report to be willing to take up a training as an electrician and only marginally more to take up a training position as an elderly care nurse (55%). The exception are younger women (56% and 65%, respectively) and women who previously had completed vocational training (60% and 61%, respectively). The status of the asylum process does not seem to play a bigger role, at least not on average. Interestingly, there are differences across cultures with women from the Middle East being particularly unwilling to take up vocational training, while women from African countries reaching or even exceeding the levels of their male counterparts. Among men, 66% would take up a vocational training as electrician and 51% as elderly care nurse. Again, the reported levels are higher among younger (74% and 59%, respectively) and more educated refugees (74% and 55%, respectively).

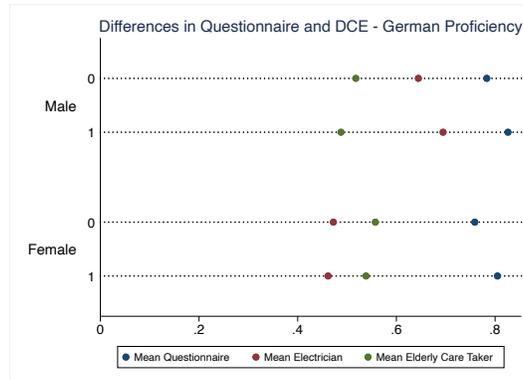
There may be several factors at play why refugees' willingness to take up a vocational training position significantly drops once confronted with a realistic offer. One obvious reason is that the industry or the occupation where skilled labor is short does not fit refugees' ideas where they would like to work. Note, however, more than half (57%) of all refugees state to be willing to take any job and not insist in working in a specific occupation. Once we dig deeper into refugees' ability and/or willingness to work under the

Table 4: Difference between Self-reported Willingness and Predicted Willingness based on the DCE

	Questionnaire	Predicted Means	
		Electrician	Elderly Care
Panel A: All	0.786	0.611	0.523
Panel B: Female	0.77	0.47	0.55
Under 25	0.75	0.56	0.65
Over 50	0.19	0.19	0.25
College Degree	0.78	0.44	0.47
Vocational Degree	0.86	0.60	0.61
Asylum Decision	0.76	0.47	0.56
No Asylum Decision	0.76	0.5	0.55
Asylum Approved	0.75	0.43	0.55
No Asylum Approved	0.78	0.53	0.58
Good German	0.81	0.46	0.53
Married	0.74	0.41	0.51
Children	0.66	0.47	0.57
Origin Middleeast	0.69	0.37	0.48
Origin Africa	0.92	0.64	0.69
Panel C: Male	0.79	0.66	0.51
Under 25	0.85	0.74	0.59
Over 50	0.66	0.52	0.42
College Degree	0.81	0.70	0.56
Vocational Degree	0.83	0.74	0.55
Asylum Decision	0.78	0.65	0.50
No Asylum Decision	0.84	0.68	0.57
Asylum Approved	0.75	0.60	0.45
No Asylum Approved	0.81	0.70	0.55
Good German	0.83	0.69	0.49
Married	0.75	0.63	0.47
Children	0.76	0.64	0.48
Origin Middleeast	0.76	0.66	0.47
Origin Africa	0.86	0.65	0.48

NOTES: Column 1 reports means for the survey question "Would you be willing to start a vocational training?" Column 2 and 3 report the predicted means from OLS regressions using data from the DCE.

Figure 1: Differences between Questionnaire and DCE



NOTES: For reference see Table 4 : Graph still has to be improved

Table 5: Difference between Activities and Tasks reported in the BiBB/BAuA Survey and the self-reported ability or willingness by ifm Refugee Survey Participants

Top 3 Activities and Tasks	BiBB/BAuA Data	ifm Refugee Survey
Panel A: Electrician	% reporting to	% being able/willing to
... engage in fine craft	88 %	57 %
... solve new problems	88 %	64 %
... work with a computer	79 %	41 %
Panel B: Elderly Care Taker		
... communicate	99 %	65 %
... take care of people	99 %	62 %
... do physically strenuous work	90 %	42 %

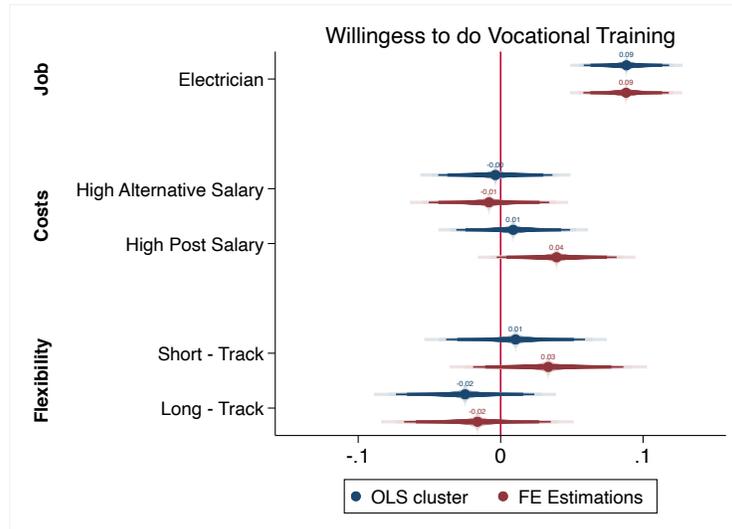
NOTES: BiBB/BAuA Survey: roughly 20'000 employees older than 15 years providing information on their job, specifically which abilities are needed to fulfill the job characteristics. Contrasting this with the answers by the participants in the Ifm Refugee Surveys when being asked whether they are able and/or willing to fulfill certain requirements.

conditions and to fulfill the activities and tasks required by jobs where skilled labor is short, the picture looks a bit different. For that purpose we draw upon the BiBB/BAuA Employee Survey, a cross section of roughly 20'000 employees older than 15 years providing information on their job. Specifically, out of all survey participants working as an electrician 88% report to engage in fine craft and to have to solve continuously new problems, 79% report to work with a computer. Contrasting this with the answers by the participants in the ifm Refugee Surveys when being asked whether they are able and/or willing to fulfill certain requirements by a job only 57% state to be able/willing to engage in fine craft, 64% to be able/willing to solve new problems and only 41% to work with a computer. A similar picture arises when looking at the occupation of an elderly care taker. In the BiBB/BAuA Survey 99% say that they are communicating and care a lot for other people, and 90% report that their job is physically strenuous. Among the participants in the ifm Refugee Survey 65% state that they would be able/willing to talk a lot with people, 62% would be able willing to care for other people and only 42% would be able willing to work under physically strenuous jobs. In sum, the industries with a high demand for skilled labor where refugees could potentially start to work, do not seem to offer the working conditions where the majority of refugees would be able willing to work.

IV.B. Raising the Willingness to Invest - Results from the DCE

The pressing question is how to raise refugees' willingness to invest into vocational training. The DCE allows us to answer this question with respect to key features of the vocational training and the alternative job: the salary in the alternative job, the salary after completing the training, the flexibility of the training scheme and the guarantee to stay for at least two years after completing the training. Figure 2 displays the results from the DCE when using linear regressions with OLS estimates with clustered standard errors at the individual level and individual fixed effects (the regression tables to all the figures in this section can be found in the appendix).

Figure 2: Difference between OLS and FE estimates



NOTES: Source: ifm Refugee Survey, own calculations; N = 2,369; The OLS regression includes clustered standard errors on the individual level. The constant of the OLS regression = 0.51; The constant of the FE regression:

Jobs

Recall that all interview participants are asked to make a decision for two scenarios one between a vocational training as electrician and an unqualified assistant job and another one between a vocational training as elderly care nurse and an unqualified assistant job. On average, we observe that 50.2% of all interviewed refugees are willing to take up a 3-year vocational training leading to a certificate as elderly care nurse (see Column 1, Table A.2). Importantly, in this baseline scenario the salary received while being on training amounts to 800 Euro, in contrast to 1000 Euros when working as an unqualified assistant in a restaurant, in the cleaning sector or construction, once the training is completed the salary rises to 1300 Euros. Once we control for the opportunity to get a vocational training as an electrician, the willingness already rises by 8.8 ppt (in other words it increases by 17.5%). Which means that indeed the precise job does make a difference (as also described in section IV.A.).

Costs

Turning to the financial aspects in the human capital investment theory, we can elicit two different aspects: opportunity costs, in terms of higher outside wages, and returns of investment, in terms of higher wages after the completion of the vocational training. Increasing the outside wage by 500 Euros (which is an increase in 50% of the baseline) reveals no significant effect. Whereas increasing the returns to investment by 600 Euros (again almost 50% of the baseline), increases the willingness to invest into host-country specific human capital by roughly 4ppt (which is an increase by 7.8%). This result suggests that higher opportunity costs are not decreasing refugees willingness to invest in human capital, but higher returns to their investment can indeed attract more refugees to start a vocational training.

Flexible Training Schemes

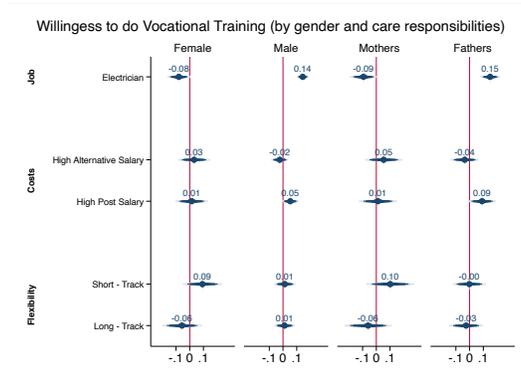
Given the opportunities a vocational training can have for refugees, policymakers were discussing, which kind of training schemes would be better suited for refugees and how they could remove certain obstacles refugees are facing when deciding to starting a vocational training. Two of these policy options, which were mostly discussed Giving refugees the chance to either select a short-term training scheme with less theoretical load or a longer-term, which includes a further language course, reveals that refugees tend to choose the shorter term. This is indeed consistent with the theoretical predictions, as through the length of training, the investment costs rise or decline.

Heterogeneity Analyses

As we have described in Section II.B. we do expect differentiated answers by specific subgroups, given that their costs of investments and potential returns to these investments might differ. Furthermore, different training schemes might attract different subgroups given their length, investment costs and legal securities. In what follows, we dig deeper into different treatment effects on particular subgroups which were mentioned by [Brücker *et al.*, 2019]; these are gender differences, parents, different educational prepositions and the legal status of the refugees.

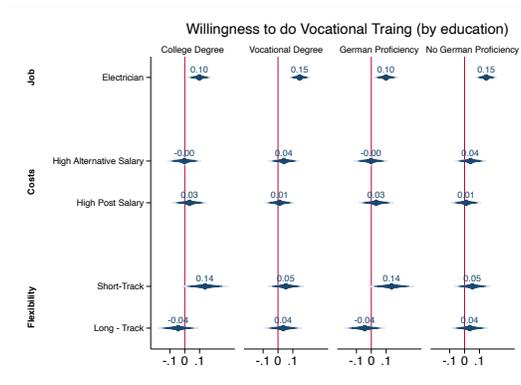
As we have discussed previously, the share opting for vocational training increases by 8.8 percentage points, or 17.5%, when being offered a training position as electrician (see Column 1, Table A.2). The reason for this might be job-related preferences – this becomes evident when differentiating between men and women, the willingness to invest into vocational training increases by 14.3 percentage points for men, but decreases by 7.9 percentage points for women – as well as differential portability of the acquired skills – the demand for electricians is likely to be higher than the demand for elderly care nurses in most countries of origin. The financial returns to investing into training make a particularly strong difference for male refugees – their willingness to take up a vocational training increases by 5.3 percentage points or 10.7% when being offered 600 Euros or 46% higher post-training salary – particularly when they are fathers – their willingness even increases by 9.1ppt or 18.1%. Refugees with granted asylum (6.6 percentage points or 13.7%) and refugees with a good command in German (11.0 percentage points or 22.8%) are also reacting most to an increase in the returns to investment. In contrast, for women the decisive factor is the length of the training: having to go through a 2-years long training instead of a 3-years long training (which also implies a slightly less prestigious certificate when completing the training) raises their odds to take up vocational training by 9.3 percentage points or 17.8%. A shorter training period motivates also the more educated refugees (by 13.7 percentage points or 23%) and the refugees still awaiting their asylum decision (by 12.6 percentage points or 24.6%). Interestingly, this results also reveals that the policy measure to grant refugees the right to stay for at least two more years after completing the vocational training does not play a significant role to motivate refugees to invest into vocational training.

Figure 3: Difference between Gender and Care Responsibilities



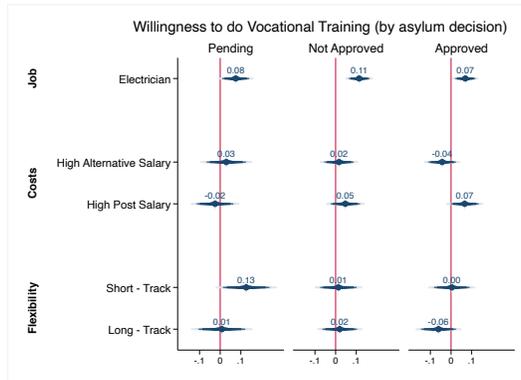
NOTES:

Figure 4: Difference between Education Levels



NOTES:

Figure 5: Difference between Legal Statuses



NOTES:

Table 6: Willingness to Invest in a Standard Training versus When Offered a Portfolio

	Predicted Means	
	Only Possibility of 3 years of Training	Possibility of 2, 3 or 4 years of Training
Panel A: All	0.57	0.63
Panel B: Female	0.50	0.68
Children	0.50	0.74
College Degree	0.33	0.67
Vocational Degree	0.53	0.96
Good German	0.50	0.92
No Asylum Decision	0.51	0.90
Asylum Approved	0.44	0.67
No Asylum Approved	0.58	0.74
Panel C: Male	0.59	0.64
Children	0.56	0.61
Good German	0.60	0.68
College Degree	0.67	0.73
Vocational Degree	0.62	0.74
Asylum Decision	0.58	0.63
No Asylum Decision	0.60	0.72
Asylum Approved	0.53	0.63
No Asylum Approved	0.62	0.68

NOTES: Predicted means from FE regressions by subgroups if either there would be only the option of 3 years vocational training (column 1) or the possibility of 2, 3 or 4 years of vocational training (column 2).

Willingness to Invest in Case of Free Choice of Alternative Track Options

The results of the DCE allow us furthermore to make some predictions to what extent policy makers may be able to impact refugees’ willingness to take up vocational training and thus to untap a potential pool of skilled labor. Specifically, we contrast refugees’ willingness to invest into training when offered a baseline 3-year long training or a more flexible offer of vocational training programs varying in time, cognitive load and legal securities. The underlying idea here is to widen the range of training program types such that they can choose from a portfolio the option that suits them best. As we can see in Table 6, providing refugees with a choice between differently designed training programs raises their willingness on average by 6 percentage points or 10.5%. The leverage is, however, substantially larger in the case of women – the share opting for a vocational training would raise by 18 percentage points or 36.0% – and particularly pronounced among women who have a college degree (by 34 percentage points or 103%), completed previously a vocational training (by 43 percentage points or 81%) or who are proficient in German (by 42 percentage points or 84%).

V. CONCLUSION

Effective and sustainable labour market integration constitutes a crucial aspect for the economic and social integration of refugees into host countries. Host countries benefit even further, if refugees can be moreover motivated to invest into vocational training allowing them to work in occupations with severe shortages of skilled labor. This study uncovers the willingness to invest in vocational training in Germany by introducing a discrete choice experiment (DCE) into a large survey of recent refugees. The DCE confronts participants with the decision to either start vocational training or to work in an alternative unqualified job. This experimental approach strands in contrast to simply self-reporting one’s own willingness to take up vocational training, as it allows to minimize socially desirability, to mimic real

market transactions and to elicit the impact of changing the actual costs and benefits of investing into human capital.

Our study generates two important sets of results. refugees' self-reported willingness to invest in vocational training decreases significantly when confronted with a realistic offer, specifically a job offer in an industry where skilled labor is short and where refugees face a realistic chance to indeed find work. The relatively low willingness to start a vocational training can be explained by an insufficient match between the skills and tasks required by the sectors with shortage in skilled labor and the skills offered by refugees and their expectations under which conditions they would like to work. Second, changing the modalities, in particular the costs and the benefits of vocational training only modestly increases refugees' willingness to invest in host-country specific human capital. Nevertheless, some subgroups, in particularly educated women, may be substantially more likely to start a vocational training when being able to choose among a set of vocational training programs.

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Table A.1: Balancing tests regarding the randomly assigned attribute values

	Post-Training Salary	Alternative Salary	2 vs. 3 Year Training	2 vs. 4 Year Training
Female	-0.004	-0.015	0.024	0.005
Under 25	-0.018	0.018	0.02	0.006
25-35	-0.021	0.007	0.036	-0.031
35-45	0.049**	-0.015	-0.043*	0.009
Over 45	-0.010	-0.010	-0.013	0.016
College Degree	0.006	-0.019	0.007	0.036*
Vocational Degree	-0.003	-0.017	-0.021	-0.028
Willing Vocation	-0.003	-0.012	-0.021	0.006
Willing Further Education	-0.042**	-0.001	0.007	-0.021
Willing Study	-0.015	0	0.026	-0.052**
Asylum Decision	0.001	-0.013	0.017	0.011
Asylum Approved	0.048**	-0.009	-0.024	0.043
Full-time Work	-0.014	-0.028	0.023	-0.051
Search for Vocation	-0.001	0.003	0.008	0.001
Good German	0.01	-0.024	-0.015	0.033*
Arrived after 2015	0.011	-0.002	0.001	0.001
Married	0.037*	-0.021	0.02	-0.015
Children	0.031	-0.018	0.009	0.007
Origin Middleeast	0.001	-0.017	-0.016	0.023
Origin Africa	-0.004	0.012	0.02	-0.033
Quest. English	-0.013	-0.002	-0.012	-0.005
Quest. Arabic	0.031	-0.015	0.032	0.014
Quest. Farsi	-0.018	0.017	-0.02	0.019
Karlsruhe	-0.005	-0.018	0.021	-0.021
Stuttgart	0.023	0.008	0.027	0.02
Tuebingen	-0.004	-0.005	-0.014	0.001
Freiburg	-0.014	0.015	-0.035	0.018

NOTES: The table shows the means of survey participants over a variation of socio-economic characteristics and the differences between participants who are assigned to the specific treatments and who are not. Post salary = high salary post-training, Alternative Salary = high alternative salary; Perspective =e perspective of being able to work in the job of the training for 2 years after the training; Duration = duration of the training of either 3 or 4 years, (1) = Electrician; (2) = Elderly Care Taker; * p<0.1, ** p<0.05, *** p<0.01

Table A.2: Effects of Determinants of the Willingness of Vocational Training - Panel- OLS vs. FE

	(1) OLS (cluster)	(2) FE
Jobs		
Electrician	0.0883*** (0.0153)	0.0881*** (0.0153)
Costs		
Higher Alternative Salary	-0.00370 (0.0204)	-0.00817 (0.0216)
Higher Salary after Training	0.00883 (0.0204)	0.0393* (0.0214)
Flexibility		
Short - Track	0.0105 (0.0248)	0.0335 (0.0269)
Long - Track	-0.0250 (0.0248)	-0.0163 (0.0262)
Constant	0.525*** (0.0255)	0.502*** (0.0243)
Observations	2369	2369
R^2	0.009	0.033

Standard errors in parentheses
 * p<0.1, ** p<0.05, *** p<0.01

Table A.3: Effects of Determinants of the Willingness of Vocational Training (by gender and care responsibilities)

	(1) female	(2) male	(3) mothers	(4) fathers
Jobs				
Electrician	-0.0794** (0.0322)	0.143*** (0.0171)	-0.0933** (0.0378)	0.150*** (0.0273)
Costs				
Higher Alternative Salary	0.0319 (0.0446)	-0.0236 (0.0242)	0.0539 (0.0523)	-0.0353 (0.0399)
Higher Salary after Training	0.0143 (0.0457)	0.0526** (0.0239)	0.0118 (0.0532)	0.0908** (0.0391)
Flexibility				
Short - Track	0.0927* (0.0555)	0.0135 (0.0303)	0.101 (0.0675)	-0.00213 (0.0466)
Long - Track	-0.0564 (0.0554)	0.0115 (0.0293)	-0.0598 (0.0663)	-0.0256 (0.0477)
Constant	0.521*** (0.0492)	0.490*** (0.0275)	0.530*** (0.0586)	0.466*** (0.0455)
Observations	583	1764	433	703
R^2	0.051	0.080	0.066	0.097

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table A.4: Effects of Determinants of the Willingness of Vocational Training (by education)

	(1) college	(2) vocation	(3) bad German	(4) good German
Jobs				
Electrician	0.0985*** (0.0314)	0.146*** (0.0276)	0.0713*** (0.0172)	0.163*** (0.0337)
Costs				
Higher Alternative Salary	-0.00201 (0.0443)	0.0398 (0.0403)	-0.00301 (0.0241)	-0.0433 (0.0485)
Higher Salary after Training	0.0328 (0.0455)	0.0108 (0.0387)	0.0216 (0.0241)	0.110** (0.0472)
Flexibility				
Short - Track	0.137** (0.0589)	0.0526 (0.0471)	0.0408 (0.0296)	-0.00314 (0.0646)
Long - Track	-0.0441 (0.0526)	0.0351 (0.0481)	-0.00765 (0.0290)	-0.0503 (0.0609)
Constant	0.498*** (0.0503)	0.509*** (0.0431)	0.507*** (0.0270)	0.483*** (0.0564)
Observations	566	746	1877	488
R^2	0.074	0.079	0.022	0.111

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table A.5: Effects of Determinants of the Willingness of Vocational Training (by decision)

	(1) pending	(2) approved	(3) not approved
Jobs			
Electrician	0.0751** (0.0329)	0.114*** (0.0254)	0.0693*** (0.0245)
Costs			
Higher Alternative Salary	0.0296 (0.0482)	0.0166 (0.0359)	-0.0429 (0.0338)
Higher Salary after Training	-0.0247 (0.0449)	0.0470 (0.0359)	0.0661* (0.0343)
Flexibility			
Short - Track	0.126** (0.0570)	0.0135 (0.0445)	0.00383 (0.0437)
Long - Track	0.00793 (0.0572)	0.0197 (0.0423)	-0.0608 (0.0428)
Constant	0.513*** (0.0571)	0.512*** (0.0386)	0.487*** (0.0389)
Observations	478	859	970
R^2	0.044	0.050	0.034

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01