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The Lost, the Confused and the Haunted: Modelling subjective beliefs on and hindrances to economic integration for forced migrants

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Contents

Part I.

Introduction

1. The Lost, the Confused and the Haunted

1.1. General introduction

European public discourse in the past seven years has been greatly dominated by the benefits and challenges that forced and irregular migration, as highlighted by the 2014/2015 influx of asylum seekers, has on its societies and economies. The reaction to the surge of incoming migrants has ranged from welcoming to belligerent. Moreover, the discussion of the role that this group of migrants would have encompassed a wide range of societal issues including its ultimate effect on Europe's: aging societies, social welfare, political orientation, cultural enclaves, position in the world stage and very security. Many of these topics are quintessential economic concerns. Mainly, they are concerned with a government's role on individual perceptions and decisions and, conversely, the role of individual decisions on societal outcomes. As forced migration is predicted to increase in the coming decades it is, therefore, paramount to study this phenomenon in detail. The main research question of this dissertation is, hence, "is it important to consider individual expectations when examining economic (integration) outcomes of forced migrants?"

Interestingly, although forced migration has been part of human history since its inception the concepts of illegal, irregular and refugee migration have only been defined since the beginning of the 20th century. They were defined as a result of increased regulations and limitations of migrants by nation-states coupled with the presence of international conflicts in the last 120 years. The concept of a refugee / asylum seeker only widely entered international discourse during and after WWII as a result of people fleeing the Nazi regime. They were further highlighted by post-war decolonization conflicts and the Cold War (Erdal, 2020; Oltmer, 2016). These concepts were cemented, on an international level, in the 1951 (Geneva) Refugee Convention and the 1967 Protocol.[1] They define a refugee as one who:

> "owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it." (UNHCR, 2021)

Most current states also have their own national legal framework regarding asylum seekers, which often offer some type of asylum protection outside the international convention.

[1] The 1951 convention restricted the definition to those in Europe and to events occurring before the 1^{st} January 1951. The 1967 protocol removed these two stipulations to include events pertaining to post-war decolonization.

The definition of an irregular migrant, on the other hand, materialized around the 1970s with the onset of globalization (Echeverría, 2020), and defines irregular migration as the: "movement of persons that takes place outside the laws, regulations, or international agreements governing the entry into or exit from the state of origin, transit or destination" (IOM, 2021). Irregular migration, hence, covers all forms of clandestine entry into a state, irrelevant of the reason for migration. Since then, there has been ample research highlighting the push and pull factors of forced and irregular migration. Reasons for irregular migration such as war or social unrest, environmental changes and economic uncertainty have been shown to be major drivers in individual migration decisions to more "stable" states where individual and economic security can be ensured, such as the United States, Canada and Western European states (Laczko et al., 2016).

This movement in turn has caused social pressure in some receiving countries, such as the US, UK and Germany, where nationalist sentiments and rhetoric have led to major political changes. Concerns centred around the possibility of migrants replacing native workers and upending social norms. Simultaneously, the presence of these new immigrants was seen as a possible mechanism by which to address economic problems in these same states caused by demographic change (e.g. aging societies) (Kalter and Granato, 2002; Laczko et al., 2016). The interplay between the possible benefits and detriments of irregular migration has been the focus of national concerns in the last decade (Melander et al., 2016). For example, studies by Kancs and Patrizio (2017) and d'Albis, Boubtane, and Coulibaly (2018) show that while public spending may increase in the short term due to an increase in border security spending and transfers to asylum seekers, in the medium to long-term these costs are offset by increased consumer spending and income tax revenues from these same asylum seekers. Indeed, in the long run the benefits from these incoming migrants either fully compensate the initial expenditure or even add revenue to the state, as compared to the pre-migration period. Moreover, there is a strong positive correlation between how fast integration occurs and the time it takes to reap the benefits from asylum seekers.

Perhaps nowhere was this more evident as with the 2014 refugee "crisis", where Europe can be seen as a crucible of this interplay. Individuals entered Europe irregularly in order to claim asylum. Most of these individuals had the intent of claiming asylum in the UK, Germany, France, Spain, Sweden or Italy (Eurostat, 2021). Attitudes, and subsequent policies, towards the incoming refugee wave varied across European countries. The initial response of some countries, e.g. Poland and Hungary, were rather hostile, with border closures and forceful removal of incoming asylum seekers. Others, e.g. Germany and Sweden, had initially rather "welcoming" attitudes with higher rates of acceptance of asylum seeker claims. Yet, as time progressed and nationalistic rhetoric continued to grow, less acceptance was shown to incoming asylum seekers (Berry et al., 2015). The end result was an increase of limitations on movement of asylum seekers between and within European countries as well as increased scrutiny in asylum claims. All of which culminated into an increase in the issuance of less stable legal statuses, e.g. subsidiary protection and toleration statuses, as well as the closure of European borders to transit countries, e.g. the Turkey and Egypt border agreements in 2016 and 2019 respectively (Al-Kashef and Martin, 2019; Kirişci, 2021; Vollmer and Karakayali, 2018).

The number of full protection statuses decreased overall in the EU starting in 2016 from 42.4 percent in 2015 to 37.5 percent. This number decreased further to 29.3 percent and 26.7 percent in 2017 and 2018 respectively. The most dramatic decrease can be seen in Germany (55.8 percent in 2015, 34.4 percent in 2016, 31.2 percent in 2017, 28.4 percent in 2018); followed by Sweden (31.5

percent in 2015, 20 percent in 2016, 23.7 percent in 2017, 21.2 percent in 2018).[2] These changes as well as other deterrence policies such as the reduction in benefits and internal movement limitations have in turn decreased the inflow of irregular migrants into Europe (Kirişci, 2021; Schneider, Segadlo, and Leue, 2020). Germany, as the country with the most initial applications for asylum, can be seen as a microcosm of the refugee crisis in Europe. Often cited reasons to seek asylum in Germany were due to the higher likelihood of receiving a positive decision on asylum claims, the standard of living for refugees in Germany and the possibility for work and education (Kuschminder, de Bresser, and Siegel, 2015). As with other European countries, the rise of nationalism and migrant skepticism meant a continual decrease of the benefits afforded to refugees as well as a decrease in full asylum and refugee statuses awarded (Burmann and Valleyatheepillay, 2017; Vollmer and Karakayali, 2018).

German asylum law and change in issued statuses

The types of asylum decisions issued in the last six years have changed dramatically in Germany as can be seen in Figure 1.1. German asylum law allows for differing forms of protection. Therefore, to understand what is meant by "positive" and "negative" decisions, I briefly explain the system below.

The decision to award asylum status is made at the federal level by the Federal Office of Migration and Refugees (Bundesamt für Migration und Flüchtlinge (BAMF)). The BAMF decides if the asylum claim will be accepted or not. There are two grounds for acceptance, if the claim falls under "refugee" protection as stipulated by the Geneva convention or if it falls under asylum protection as stipulated by the German Basic Law (Grundgesetz) (Federal Foreign Office, 2021).[3] With a positive decision, the BAMF can issue an asylum status per German Basic Law or a refugee status as per international law. In the case where Asylum and refugee claims do not hold, claimants can also be issued a subsidiary protection status which "applies when neither refugee protection nor an entitlement to asylum can be granted yet serious harm is threatened in the country of origin" (BAMF, 2019d). The latter status is also considered positive but is less secure.[4] These statuses allow for full access to the labour market and the ability to apply for permanent residence after 5 years.[5] The issuance of subsidiary protection was more frequently given after the change in the Asylum Law introduced in March 2016, regardless of country of origin. Another form of protection called the national ban on deportation (Nationales Abschiebungsverbot) can be given due to fear of harm should the individual return to the country of origin. This status is given if the asylum claim has been rejected but a return to the country of origin would violate the European Convention for the Protection of Human Rights and Fundamental Freedoms, or

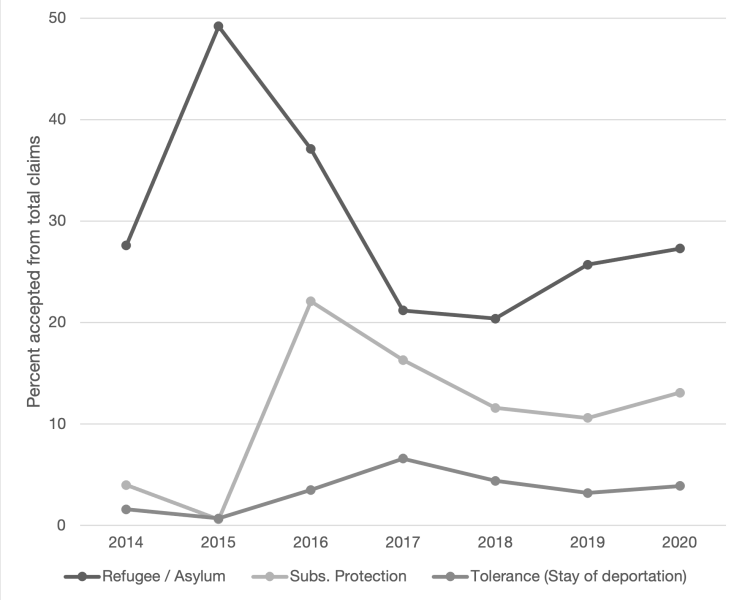
[2] Numbers taken from BAMF annual reports (see, BAMF, 2016, 2017, 2018a, 2019a)

[3] The refugee entitlement under the Grundgesetz is fundamentally similar to the Geneva convention but adds the prerequisite that the person does not have the ability to seek refuge in their country of origin.

[4] The main difference between the two former and the latter statuses are: a reduction of time given in the initial residence permit from 3 years to 1 year and no entitlement for family reunification.

[5] Provided the claimant can financially support themselves and their family and can adequately speak German (often at B1 german language level (intermediate) using the Common European Framework of Reference (CEFR)). The period can be reduced to 3 years if the claimant can show at least C1 level German language abilities.

a concrete danger for the person's safety exists (BAMF, 2018b).[6] If the asylum claim was not accepted, responsible federal state authorities are also given the discretion to issue a *Tolerance* status (most commonly referred to by its German term Duldung (Abschiebverbot)). This status allows individuals to stay in Germany for a short time (often issued for 1-6 months periods) because they cannot be removed without harm or there is a technical reason for which deportation is difficult.[7] Therefore, this status allows rejected applicants to remain in Germany until their deportation can be arranged. The last two forms of statuses do not allow full access to the labour market, but require individuals to ask for permission from the responsible immigration office.[8] Finally, a claimant can be completely rejected.[9] In this case, they need to comply and aid in their deportation from Germany to either a transit country or their country of origin. The enforcement of deportation orders is left to individual federal states. Furthermore, access to social welfare benefits decrease when there is a negative decision on asylum cases, and movement is restricted for those who do not have a positive decision or a residence permit.



Note: Data Source - BAMF yearly asylum reports (see, BAMF, 2015, 2016, 2017, 2018a, 2019b, 2020a).

Figure 1.1.: Asylum status decisions in Germany

The awarding of full refugee / asylum status decreased in 2016 after the passing of the March 2016 Asylum Law. At the same time, the issuance of the subsidiary protection status increased from 0.6 percent of all issued statuses in 2015 to 22.1 percent in 2016. This reversal continued into 2017 and 2018. Differences in the types of legal statuses given were present across nationalities and federal states. Comparing figures for the three most common countries of origin: Syrians, Afghans and Iraqis we find the following. In the beginning of the wave, 2015, 73 percent of all Afghan asylum claims in Germany were given a positive status (allowance to stay in Germany) compared to 97

[6] The issuance of this status lasts for at least one year and recipients can apply for a residence permit with the same stipulations as above (Bundesamt des Innern, 2021).

[7] Examples are for: health reasons, no identifying documentation available or administrative reasons.

[8] While (vocational) education is possible. Often individuals find it difficult to be accepted into a program given their uncertain short term status permits.

[9] Often these individuals get a temporary stay in the form of a "negative" Duldung that last a few weeks.

percent of Syrian asylum claims and 98 percent of Iraqi claims. Positive decisions significantly dipped in 2016 to 60 percent (99 percent for Syrians and 77 percent for Iraqis). Moreover, full refugee / asylum status recognitions were awarded more scarcely. In 2015, 43.8 percent of Afghan asylum seekers were given these statuses (Syrians: 95.7 percent, Iraqis: 97.4 percent), but by 2016 only 27 percent were awarded these statuses (Syrians: 57.2 percent, Iraqis: 58.6 percent). The remaining decisions were subsidiary protection, national deportation ban or toleration statuses (DESTATIS, 2021). Differences also arose along political factions across German states. States with more liberal ruling parties tended to give more lenient residence permits compared to those with more conservative parties. For example as of 2019, 80 percent of Afghans in Hamburg received positive statuses, while in Bavaria 68 percent received similar statuses (DESTATIS, 2021). These varying legal differences in access to services and the labour market can cause differing integration trajectories across migrants.

The need for new data

Literature stemming from the refugee crisis in Germany has looked at the effect of these legal changes, as post-migration stressors, on integration outcomes such as employment take up and language learning (Aksoy, Poutvaara, and Schikora, 2020; Battisti, Giesing, and Laurentsyeva, 2019; Brücker et al., 2019, 2016; Busch et al., 2020; Hainmueller, Hangartner, and Lawrence, 2016; Marbach, Hainmueller, and Hangartner, 2017). "Stressors" here are taken to mean an external stimulus or event that causes stress on the process of an individual's integration (Foster, 2001). Other recent literature has examined the role that refugees and asylum seekers play on the economic and socio-political developments in Germany and other European countries (Entorf and Lange, 2019; Gehrsitz and Ungerer, 2018; Lergetporer, Piopiunik, and Simon, 2017; Müller and Schwarz, 2018; Steinmayr, 2021; Vollmer and Karakayali, 2018). To the knowledge of the author, little research has focused, however, on the individual asylum seeker's incentives and beliefs or on how pre-migration stressors, such as experiencing traumatic events, have on integration outcomes. There are some studies that look at the intentions of refugees to invest in host country human capital (e.g., Damelang and Kosyakova, 2021; Haan, Kroh, and Troutman, 2017); however, there are none that look at these decisions through the explicit form of asking about probabilistic beliefs on events. More specifically, there is little research on how pre- and post-migration stressors change the incentives and beliefs of incoming refugees and how this in turn affects their decision to invest in host country capital, e.g. language proficiency, education and labour force participation.

The aim of this dissertation is to help fill this gap in the literature through two pathways. First, it shows how possible pre- and post-migration stressors can affect the integration process of asylum seekers in the German context. Second, it adds to the growing literature on the role that subjective expectations play in the decision-making process through looking at forced migrants' integration decisions. Part of the reason that these topics have been difficult to address in the extant literature is the lack of data by which to empirically explore the relations between stressors, subjective expectations and migrant integration. Understanding the skill background, expectations and hindrances that are a part of arriving asylum seekers is paramount in understanding the role that incoming asylum seekers would eventually play in the German society and economy. More

specifically, these factors help us understand how the inclusion of this population could influence the challenges posed by an aging society.

Faced with the lack of the data by which to substantively answer these questions we conducted two surveys at the Munich Center for the Economics of Ageing (MEA). These surveys were funded by two Max Planck research calls which has resulted in several discussion papers. This dissertation benefits from own and joint works based on these two surveys. The first survey, the Qualifications, potentials and life courses of Syrian asylum seekers in Germany (QPLC) concentrated on a group of asylum seekers who were one of the largest sub-populations of asylum seekers in the past wave and had relatively secure asylum decisions, i.e. Syrians. Conversely, the Survey on Migrants' Expectations (SME), focused on a group of asylum seekers who, though similarly large in number, had a more difficult time acquiring secure legal statuses in Germany, i.e. Afghans. Secure legal statuses mainly encompass having received a positive asylum decision; while insecure statuses relate to Duldungs, full rejections and still awaiting a decision on the asylum claim (having an Aufenthaltsgestattung). Both surveys focused, at least partially, on identifying the pertinent stressors to integration present for migrants from both countries of origins as well as measuring subjective beliefs of respondents on host country outcomes. Hence, the two surveys allow for a direct examination of these relations, without needing assumptions on what or how migrants are optimizing their decisions.

1.2. Results summary and placement in the literature

Chapter 2 outlines, in depth, the strategy used to collect the data and the main findings from these studies. Three main research questions we pose in the first study are: what are the country of origin skill sets that are brought by Syrians and how do they measure up to skill sets needed in the German economy, what motivates economic integration for this sub-population and what hinders it. The second study poses the questions: what are the skill sets that Afghan asylum seekers come with to Germany, what are the legal trajectories in a sub-population defined as having a "safe country of origin", what are the long-term beliefs regarding the ability to stay in Germany legally and how do these beliefs in turn relate to host country economic integration efforts. We first look at bi-variate relations in terms of host country skill sets in regard to key demographics, e.g. gender and age, as well as hindrances to integration, mainly the presence of traumatization and precarious legal statuses. We then relate these findings to host country investment, e.g. language, education and employment, using probit and logit specifications. Finally, we look at the relation of subjective beliefs and relate these directly to host country outcomes using logistic and linear regressions. In the first study we find that although Syrian asylum seekers, at time of arrival, may be beneficial in bolstering Germany's aging economy through providing an influx of semi-skilled young workers, the acquired skills from their host country lagged behind the average in Germany. We also find that there is a large disparity between genders when it comes to human capital investments made at country of origin that seem to propagate in Germany. Finally, we find that uncertainty plays a role in the type of investments undertaken by asylum seekers. Those who are more uncertain about their ability to stay in Germany are less likely to undertake long-term investments. These findings suggest that policies should not only address bringing human capital to the level of native Germans but also decrease investment hindrances for women.

Moreover, secure statuses seem to play a significant role in ensuring that long-term human capital investments are undertaken. We find similar patterns in the second study on Afghan asylum seekers. Gender differences are more pronounced both in country of origin and host country investments, e.g. language acquisition, education uptake and labour force participation. We also find significant differences across cities, irrespective of legal status and starting positions. Respondents in Munich are foregoing education and language investment to take up work at a faster rate. Similarly, legal ambiguity translates to lower long-term integration investments in lieu of taking up work. These findings point to the possible detrimental effects of deterrence policies on long-term integration. This concept is examined further in chapter 6. Chapter 3 highlights the literature used to build each results chapter.

The first results chapter, chapter 4, contributes to the literature on pre-migration stressors by looking at the effect that stress on mental health, e.g. experiencing traumatic events, has on refugee integration. Stemming from concerns voiced in refugee literature, as well as public discourse, the main objective of this study is to test the hypothesis that experiencing traumatic events negatively influences refugee integration to such a degree as to decrease overall outcomes. Some studies have correlated the presence of witnessing traumatic events on higher incidence rates of mental health problems (Böttche, Stammel, and Knaevelsrud, 2016; Bustamante et al., 2017; Crepet et al., 2017); while others have shown that the presence of mental health stressors can in turn reduce integration outcomes (De Vroome and Van Tubergen, 2010; Dietrich et al., 2019; Hauff and Vaglum, 1993). A direct linkage has thus far not been covered. This chapter fills this gap by directly examining the role of traumatic experiences on short-term integration of Syrian refugees in Germany. We concentrate our analysis on a sub-population of refugees that have arrived in the last wave and that have experienced a high incidence level of potentially traumatizing events to examine this mechanism. We use the QPLC survey which has a module on trauma as well as measures on structural integration, i.e. education and employment outcomes, and German language acquisition. We are able to analyse the relationship between the presence of traumatic stressors and integration outcomes given information gathered on the number of traumatic events experienced pre- and during-migration. We model this relation by drawing from literature on dose-response and stress process theory (Beiser, Turner, and Ganesan, 1989; Böttche, Stammel, and Knaevelsrud, 2016; Miller and Rasmussen, 2010). We presume that there is a negative effect of experiencing traumatic events, pre- and during-migration, on integration. We estimate the effects using ordinary least squares and linear probability models. In contrast to the a priori assumptions in the literature, we find that there is actually a positive effect of traumatic experiences on cognitive-cultural integration, i.e. language acquisition, and close to zero effect on structural integration, i.e., employment uptake and enrolment into education. We posit that due to possible higher motivation to remain in the host country, in the short-run, Syrian asylum seekers seem to be integrating despite the added burdens of having experienced traumatic events.

The second results chapter, chapter 5, focuses on the second pathway, the role that subjective expectations play in the decision making process. The role that host country language proficiency plays in short and long-term integration of migrants has been extensively studied (Adserà and Pytliková, 2015; Chiswick and Miller, 2015). Within this literature, it is assumed that the level of language proficiency that a migrant undertakes differs along the line of what migrants' expectations about their economic return to this investment would be. Yet, existing literature fails to directly measure the role of subjective beliefs in regard to economic outcomes on the

level of migrants' host country language acquisition. The main objective of this chapter is to address this gap in the literature. Our research question is: how do beliefs on the probability of gaining a permanent residence, a secure job and earnings in the host country influence the proficiency of language learning. Using data collected by the QPLC survey we are able to fill this gap by using information on subjective beliefs regarding the return to language proficiency. We test the hypothesis that those who expect higher probabilities of getting a permanent residence or a stable job or have higher expected wages from language abilities, are more likely to have higher language proficiency. We measure language proficiency using objective tests on German word/sentence comprehension and conversation skills. We estimate the effects of economic incentives on language proficiency using ordinary least squares (OLS) models. This study finds evidence that proficiency in language acquisition responds to economic incentives. The analysis shows that asylum seekers who expect a higher chance to obtain a permanent residence permit from being competent in German have significantly higher language proficiency.[10]

The third chapter of the results section, chapter 6, straddles both pathways by providing an example of how one very important post-migration stressor, legal ambiguity, changes the incentives of the decision to stay clandestinely and the consequential investment into host country human capital, i.e. language acquisition. Afghan asylum seekers are a group of refugees that are less likely to be awarded a secure legal status in Germany; yet they make up the third most prominent group of refugees in the last wave. Asylum seekers with a rejected application account for three fifth of illegal migrants in Germany. Yet, the level of deportation is rather low, less than 1 percent of the refugee population with no legal right to stay are deported every year. These facts imply that the potential for clandestine stay could be rather higher in this sub-population. This chapter sheds some light on the motives behind the decision of Afghan asylum seekers to overstay. There are three main research questions we answer in this study. First, what are the beliefs of Afghan migrants with respect to the outcome of asylum applications and other outcomes related to legal status? Second, are those beliefs malleable? In particular, the belief about the risk of deportation? Finally, what are the determinants of the intention to overstay? In particular, how important is the prospect of obtaining the right to stay in the future? This chapter relates to literature on how individual subjective expectations play a role in investment decisions and behaviours (Attanasio and Kaufmann, 2014; Delavande, 2008; Hoxhaj, 2015; McKenzie, Gibson, and Stillman, 2013; Van der Klaauw, 2012; Wiswall and Zafar, 2015). It also relates to the literature on the determinants of illegal migration given individual expectations (Bah and Batista, 2018; Mbaye, 2014) and the effects of legal statuses on immigrants' outcomes (for a review see Fasani, 2015). In the SME survey we elicited subjective beliefs about the chance of obtaining the right to stay in Germany, the perceived risk of deportation and outcomes related to the legal status. We included a Randomized Controlled Trial (RCT) that provided information about the actual proportion of deportation to half of the population. Furthermore, we elicited the intention to overstay under different hypothetical scenarios. We first calculate the average treatment effect (ATE) from the RCT and show if subjective beliefs are malleable to the information treatment. We then look at the determinants behind the intention to overstay using OLS and least average deviation (LAD) models. Afterwards we measure the causal effect of the perceived chance to acquire the right to stay on the intention of overstaying by using responses from counterfactual scenarios posed to the respondent. The pseudo-panel design of this module allows us to utilize

[10] An increase by 10 pp (0.5 standard deviation) of the expected return to language ability increases language proficiency scores by a 0.06 to 0.09 standard deviation.

a fixed effects estimation strategy. Finally, we use a mediation analysis framework to gauge a possible mechanism on how institutional background can hamper beliefs and therein investments. We find that Afghan asylum seekers have upwardly biased beliefs about the risk of deportation. Providing information about the actual proportion of deportation in the population does not have a sizable effect on those beliefs or on the intention to overstay. The perceived chance of obtaining the legal right to stay is a key determinant of the intention to overstay. Moreover, we also document substantial variations of subjective beliefs and intention to overstay across cities and show how differences across cities hamper not just beliefs but also human capital investment, e.g. language learning.

Finally, while the previous chapters explored how subjective beliefs play a crucial role in the decision-making process of an agent, chapter 7 focuses on how updates to initial beliefs are as equally important in determining outcomes. This chapter examines how incorrect prior beliefs, specifically the successive process of learning as measured by changes from a priori beliefs, has on a migrant's economic integration, e.g. labour market participation. This chapter contributes to the literature on the role that misspecified beliefs play in individual outcomes (Huffman, Raymond, and Shvets, 2019; Lazear, 2016; Malmendier and Tate, 2005; Meikle, Tenney, and Moore, 2016; Otto, 2014; Spinnewijn, 2015; Stinebrickner and Stinebrickner, 2014; Stinebrickner and Stinebrickner, 2012; Van den Steen, 2014). Furthermore, this chapter provides evidence that assumptions on migrants' over-optimistic pre-migration expectations may not be as present in the asylum seekers' case. Changes in beliefs are purported to be a result of differences in information known pre- and post-arrival. There are two research questions posed: first, is there a gap in perception of access to the labour market upon arrival for asylum seekers in their chosen host country, and if so, how large is the belief updating; second, what affect does this updating of beliefs actually have on actual labour market outcomes? A change in beliefs is defined as positive or negative differences between at time of interview and ex-ante beliefs. The main analysis models the relationship between belief updating and labour market outcomes, e.g. labour market entry and attachment. Instrumental variables are used in order to address possible endogeneity in the structural model. The potential outcome framework as developed by Rubin and Imbens is also used to ensure results are robust to the structural model used in the main analysis. The study finds that there is a change over time of refugees' beliefs on access to the labour market, indicating the presence of learning. Over a third downgrade their beliefs, 40% do not update their beliefs and another quarter upgrade. Moreover, only in the downgrading case is there a negative effect on entry into and attachment to the labour market. Instrumental variable analysis and the ATT as calculated using the potential outcome framework also back these results.

Several studies in this dissertation were conducted in collaboration with other researchers at MEA. Parts of the work presented here are updates of the publications mentioned above as follows. The survey results found in the QPLC study presented in chapter 2 was a joint work with Axel Börsch-Supan, Christian Hunkler and Romuald Méango and has been published as MEA discussion paper No. 01-2019. The study in chapter 4 was a joint work with Christan Hunkler and has been published as MEA discussion paper No. 05-2019 and in a special issue of Soziale Welt, [11] please see Hunkler and Khourshed (2020). Likewise, the study in chapter 5 was conducted with Romuald Méango and has been published as MEA discussion paper No. 01-2020. Finally, the

[11] *Soziale Welt.* Vol. 71, Issue 1-2, pg. 90-122, 2020

study in chapter 6 was conducted jointly with Romuald Méango and Diana Falcòn-Lòpez and has been published as MEA discussion paper No. 18-2020.

The rest of this dissertation is ordered in the following way. Chapter 2 gives an in-depth explanation of the methods used in data collection of the two MEA surveys as well the sample characteristics and stylized facts found from each survey. Chapter 3 outlines the literature used throughout the dissertation and chapters 5 - 7 show the individual results of the dissertation. Chapter 8 highlights the main results of the overall research, the limitations of the work and outlines the insights from the research that should be further tested and addressed in future research and policies concerning forced migrants. Appendices for each result section can be found at the end.

Part II.

Data and theory

2. The Two MEA Surveys

This dissertation work is based on data collected by two surveys conducted between 2017-2019 on asylum seekers in Germany. The first study, "Qualifications, potentials and life courses of Syrian asylum seekers in Germany" was conducted in the second half of 2017 and focused on a group of asylum seekers who had relatively safe legal trajectories upon arrival in Germany, i.e. Syrians. In juxtaposition, the second, "The Survey on Migrants' Expectations in Germany" was conducted in 2019 and focused on a group of asylum seekers who had relatively uncertain legal trajectories, i.e. Afghans.

This chapter describes the methods used to collect the data in the two surveys, outlines key characteristics of the samples and draws some general conclusions, although non-causal, about the data collected.

2.1. Qualifications, potentials and life courses of Syrian asylum seekers in Germany

The Qualifications, potentials and life courses of Syrian asylum seekers (QPLC) survey was motivated by the necessity to understand the experiences, motivations and investment decisions that newly arrived Syrian asylum seekers in Germany have or undertake. With the rise of asylum seekers in 2014, public debate centred on three major questions: who are those arriving in Germany, what are their future prospects in Germany and how can they best be integrated into the German society and labour market. Hence, several studies were initiated to answer these questions (Brücker, Rother, and Schupp, 2016; Brücker et al., 2016). These studies focused on collecting a narrative of asylum seekers' life courses. We contribute to the discourse by adding several layers we deemed missing. First, we focus not only on the life courses and potentials of incoming asylum seekers but also on their actual ability. We do so through conducting several aptitude and German language tests. Our second research line addresses what may motivate or hinder asylum seekers to integrate. As integration of asylum seekers may differ from other types of migrants given their starting position, we directly ask about traumatic events they may have experienced, if they have precarious legal statuses and if they contend with uncertain familial and living situations. Our final research question focuses on how expectations relate to actual and intended integration outcomes, e.g. their influence on the decision to learn the host country's language or invest in host country education. We focused on the most numerous nationality present in the recent wave of asylum seekers in Germany, Syrians. The fieldwork was conducted in Bavaria and lasted from May to December 2017. We collected 275 interviews.

Seeing as our sample consists of newly arrived Syrian asylum seekers, most of our analysis focuses on investment into achieving structural integration in Germany; however, we also attempt to cover other integration mechanisms – social, cultural and emotional – where feasible. Please see chapter 3 for a definition of these mechanisms.

We present five overarching results in this contribution. First, the demographic characteristics (age/gender distribution and familial composition) of this population may be beneficial in bolstering the aging population of Germany; thus, partially alleviating the demographic challenge facing it, provided that these individuals are able to integrate into the society. Second, the labour skills present in the population would be in line with the German labour market; however, there is a skill/knowledge gap between Syrian asylum seekers and host country residents that needs to be addressed. Third, there is also a skill gap between Syrian women and men that seems to be reproduced in the host country. Fourth, we find that traumatic experiences are prevalent in the population; however, contrary to our expectations, persons who experienced traumatic situations do engage in integration activities to the same extent as those who do not. Finally, following the methods of Manski (2004), Delavande (2008) and, Delavande, Giné, and McKenzie (2011), we directly measured respondents' expectations about their ability to stay in Germany (as well as to get a secure job or to bring their family) given different educational investments. We find that where Syrians expect that investing in human capital increases their chance of staying in Germany, these investments are made more often. However, those who expect a secure job to be more beneficial place more focus on job seeking activities.

The structure of this study is as such: section 2.1.1 describes the methodology of our study, section 2.1.2 focuses on the life courses of Syrian asylum seekers, including their educational careers and work experience. In section 2.1.3, we go beyond the usual descriptive statistics and present the results of several objective tests and focus on additional determinants of integration, namely health and potentially traumatic events. Section 2.1.4 focuses on future investments into integrating in the host country and on respondents' expectations. Section 2.1.5 outlines the major implications and section 2.1.6 concludes.

2.1.1. Materials and methods

Questionnaire development and translation procedure: The source questionnaire of the QPLC project was developed in English and German. We conducted several cycles of translation into Syrian Arabic using the Translation, Review, Adjudication, Pre-testing and Documentation (TRAPD) method (Harkness, Van de Vijver, and Johnson, 2003). The TRAPD approach advocates the use of at least two translators that produce parallel translations. The translations are then looked over by a reviewer and an adjudicator who choose and merge the translations that are closest to the aim of the survey. We took great care in ensuring that the translation was as close as possible to the dialect spoken and understood by the majority of Syrians. Furthermore, we conducted several trial runs on the content of the questionnaire and the translation's tractability using a sample of individuals of Syrian descent. Items that required further elaboration by interviewers were addressed during interviewer training.

Fieldwork and validation checking: We implemented the survey using 17 interviewers who were from Syria or neighbouring countries who spoke a similar Arabic dialect. All but one were proficient in the German language, the last had intermediate (B1) level German. Interviewers were distributed in Northern and Southern Bavaria, which aided in the process of covering facilities around the state. We made sure to recruit as many female interviewers as possible (seven out of the 17) in order to guarantee that there were enough to interview female respondents. This strategy seemed to work well as several female respondents asked to be interviewed only by a female interviewer. The duration of the interviews ranged from 40 minutes to two and a half hours; however, on average the interviews lasted 107 minutes (median duration was 105 minutes and the mean was 106.96 minutes). Our fieldwork was split into two field periods. Due to time constraints, in the second half we simplified some modules in the questionnaire. This entailed merging all the questions on language and integration course attendance into one set asking on both type of courses, because we found several respondents could not report the type of course attended. Finally, to shorten interview length, we implemented a new expectations module that both expounded on the concepts and simplified the questions. We ensured the quality of the fieldwork by conducting validation checks. We did so by re-contacting five percent of the interviewees and asked about the interview dynamics and content. A less direct manner by which we were able to ensure quality resulted, haphazardly, from the administrative tasks required in running this survey. As the day-to-day logistics of the interviews were implemented in house, we had a first-hand account of how interviews were conducted. All checks revealed no instance of any interviewer misconduct.

Sampling and response rate: The target population of the QPLC survey comprised of persons aged 18 or older with Syrian nationality who entered Germany starting from 2014 in order to apply for protection. For sampling, we were not granted access to the federal foreigner register. Instead, we randomly drew towns and rural districts proportional to population size. Then, in most regions, with help from the regional governments, we obtained a full listing of group housing facilities for the drawn towns and districts. We evaluated the facilities according to a predefined set of rules and then randomly selected a defined number of target facilities if more than the desired number of facilities matched the criteria. Within smaller facilities we invited all eligible persons. If more than 60 individuals matched the target population criteria, we randomly selected respondents, usually blocked by rooms to reduce the burden on families, who were often housed in the same room. In some regions and housing facilities, we were not fully supported by the authorities, i.e. the regional government did not help in listing the facilities or facilities did not provide a register of eligible persons as data protection concerns were voiced, especially on facility level. In such cases, we researched the necessary information ourselves, which was successful except for the region of Upper Bavaria. Within selected facilities, our interviewers were asked to approach inhabitants and to screen for eligible individuals. We conducted 275 interviews of which all but seven were complete. In the following analyses, we use all available information from the 275 interviews. That is if not specified otherwise, percentages refer to the full sample, and we report if more than 10 percent of respondents did not answer the respective question. The response rate was 46.8 percent. Table 2.1 shows the sampling plan for the eight regions of Bavaria, the actual procedures used and the results. Note that Munich is actually part of Upper Bavaria (Oberbayern) but was singled out as an extra region due to its large population. We distributed 15 sampling points proportional to the size of the population across the eight

regions. To compare the population housed in facilities, we conducted additional interviews with Syrian asylum seekers who had moved out of the facilities in a larger city in the region of Middle Franconia using a register sample. In several regions, we found that the number of persons in some facilities was lower than expected. Hence, we added facilities where feasible. Therefore, the number of actual facilities surveyed in these regions is larger than initially planned. In general, the response rate is higher in the regions where the regional government aided in facility sampling and, with their support, usually the facilities also provided individual lists. In Upper Bavaria and Swabia, we had to research the facilities ourselves, which not only resulted in severe delays in field start but also in considerably lower response rates. Moreover, the difference between intended number of interviews and the number of realized interviews is largest in these regions. The discrepancies between intended and realized interviews in the region of Upper Palatinate and in the register sample are mostly due to shortages in interviewer time in these areas.

Table 2.1.: Sampling plan, procedures and realized interviews by region and sample type

Region	Population	Planned facilities (n)	Sampling	Actual facilities	Type	N complete interviews	Response rate
			Facilities				
Upper Franconia	8.3%	1(30)	Reg. gov.	2	List	29	46.8%
Middle Franconia	13.5%	2(60)	Reg. gov.	2	List	46	44.2%
Lower Franconia	10.2%	2(60)	Reg. gov.	3	List	59	65.6%
Upper Palatinate	8.5%	1(30)	Reg. gov.	1	List	11	52.4%
Lower Bavaria	9.4%	1(30)	Reg. gov.	3	List	22	41.5%
Munich	11.3%	2(60)	City	3	Screen	30	35.7%
Upper Bavaria	24.4%	4(120)	Own research	2	List	23	71.9%
Swabia	14.4%	2(60)	Reg. gov. & own research	3	Screen (2) & list (1)	32	33.7%
			Register				
Middle Franconia		50	City	(1)	List	16	50.0%
Total	100.0%	16(500)		20		268	46.8%

Notes: This table is based on the 268 complete interviews. Population refers to the general population as of 2017 retrieved from official statistics (BLS, 2017). Facility sampling was assisted by either the regional governments ("Reg. gov."), the cities' statistical office or registration office ("City"); own research refers to expert interviews with regional/local officials, welfare agencies and other sources mentioned by the former. The (n) in planned facilities indicates the number of planned interviews in each region. Munich is a part of Upper Bavaria but is singled out due to its size. All other cities in the region fall under "Upper Bavaria". Interviews from the register in Middle Franconia were done in the city of Nuremberg.

Although we restricted the study to Bavaria and predominantly sampled the population living in group housing facilities, the distribution of demographic variables is similar when comparing our sample to German national statistics and to the IAB/BAMF/SOEP study conducted in 2016 (see section 2.1.2 for more detail). The IAB/BAMF/SOEP study also focused on Syrian refugees, among other origin groups, and they had the advantage of getting access to the foreigner register for sampling. We find that there are only minor differences in regard to the age or gender of Syrians in Germany as compared to German statistics on the national and Bavarian level or as compared to the IAB/BAMF/SOEP study. Moreover, regarding education and other demographic variables the distributions are similar. There are differences concerning the months spent in Germany (mean: 18 months in our sample, and mean: 11 months for the IAB/BAMF/SOEP study). However, this difference relates to our study being conducted 6 to 9 months later than the IAB/BAMF/SOEP study. Given the particularities of refugee distribution, it is not surprising that our smaller and regional sample compares well. Asylum seekers are distributed according to quotas based on tax revenues and size of population ("Königsteiner Schlüssel") between federal states. The same rules are also applied within states, i.e. towns or rural districts have to accommodate asylum seekers according to their economic strength and population size. Expert interviews, with persons in

charge of the allocation of refugees in Germany, revealed that the only exceptions to the random distribution of asylum seekers across Germany are family reunifications, and shortages in housing capacities. As Syrians were by far the largest group to immigrate from 2014 to 2017, there is no reason to assume that they could systematically have been housed in certain states or areas.

Ethics: Our study deals with several sensitive topics such as health status and possible traumatization. We obtained permission to conduct this study from the Max Planck Society's Ethics Board. Potential respondents received an invitation letter explaining procedures, data protection and anonymization details. Before starting the interview, interviewers obtained oral informed consent. The oral procedure was chosen to reduce potential privacy concerns and socially desirable responding. We are aware that in asking about traumatic episodes, we may cause an episode of post-traumatic stress. In order to minimize any stress to our respondents we trained interviewers on appropriate behaviour and provided interviewees with information on where they may be able to seek help. There were two episodes that were detected by our interviewers and after referring them to institutions where they can get help, we found that in both cases the stress conditions were pre-existent.

2.1.2. The life courses of Syrian asylum seekers and the qualifications they bring to Germany

We start by identifying the basic characteristics of Syrian asylum seekers in our sample. We focus on their: social origin, current life-cycle position, education and labour market position. We compare our sample with results from other studies and population statistics. In doing so, we are able to determine if Syrians who came to Germany are selective when compared to the overall Syrian population.

Demographics and social origin: Figure 2.1 shows the composition of our sample in regard to the basic demographics, age and gender. 58.4 percent of our sample is under the age of 30 (mean age is 30.9). We find that 47.1 percent of the women in our sample are younger than 30 compared to 62.1 percent of men. Generally, this distinguishes the sample as relatively young compared to the native population in Germany. It does however mirror the age structure reported for Syria in 2016. In 2016 around 27 percent of the population was between the ages of 15-30 (ICPD Secretariat, 2012; Syrian Central Statistics Bureau, 2018; World Bank, 2018). The mean age is also comparable to the IAB/BAMF/SOEP sample of Syrians in Bavaria at 33.8 (Brücker et al., 2016). Our sample is predominantly male at 75.3 percent. The gender split is close to German population statistics data on this population in Bavaria, 66 percent (DESTATIS, 2018). Interestingly, studies on Syrians in Jordan and Lebanon, countries that are considered transit points, find that there is the exact opposite distribution regarding gender with a 60-40 split in favour of women (Krafft et al., 2018; Petzoldt, 2016; Saiid et al., 2016). This suggests that men are more often sent or go to Europe than women.

To understand respondents' social origin, we first look at the household situation when the respondent was at age ten. We asked respondents what the highest level of education their parents

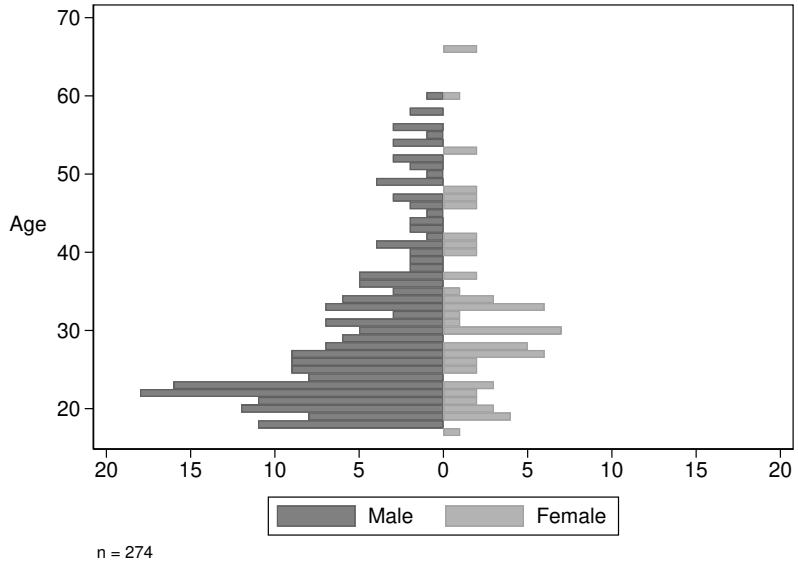


Figure 2.1.: Population pyramid of the QPLC sample

achieved. Note that in 15.3 percent of cases the information on mothers' and 8.7 percent of fathers' education are missing. We converted the answers to the International Standard Classification of Education (ISCED). ISCED is created and updated by UNESCO in order to more readily compare educational outcomes between countries. We find that respondents came from households where 34.2 percent of mothers and 22.6 percent of fathers had no formal education. Figure 2.2 shows the highest parental degree achieved. 20.0 percent come from households where both parents had no formal education. We also find that 23.6 percent come from households where the highest level of education achieved was primary education. Hence, respondents come from relatively low educated households. 16.0 percent of respondents grew up in a household where a parent had a full bachelor's, master's or doctoral degree.

To further understand the respondents' social origin; we also look at the major ISCO-08 categories of the main breadwinner's occupation when the respondent was 10 years old. Almost a quarter, 23.6 percent, of our sample came from households where the main breadwinner worked in a craft or related trades occupation. The next two most common parental occupations were skilled agricultural workers (12.7 percent) and professional occupations (12.0 percent). Only 6.9 percent of our sample came from households where the main breadwinner worked in a managerial capacity. In order to further understand these structures, we translated the ISCO-08 scale to that of the Erikson-Goldthorpe-Portocarero (EGP) scale which defines the skill levels associated with each occupation (Christoph, 2005; Ganzeboom and Treiman, 1996). We find that respondents almost equally come from three types of households: lower service professionals (20.0 percent), skilled manual workers (19.6 percent) and semi-unskilled manual labourers (20.4 percent), see Figure 2.3. Another relevant occupation is farmworkers (14.6 percent).[1] Very few households had a main breadwinner that held a higher managerial position of any sort (7.6 percent). In comparison with a similar cohort of all German residents, the percentage of individuals in these

[1] The remainiing 0.3 percent are farm managers.

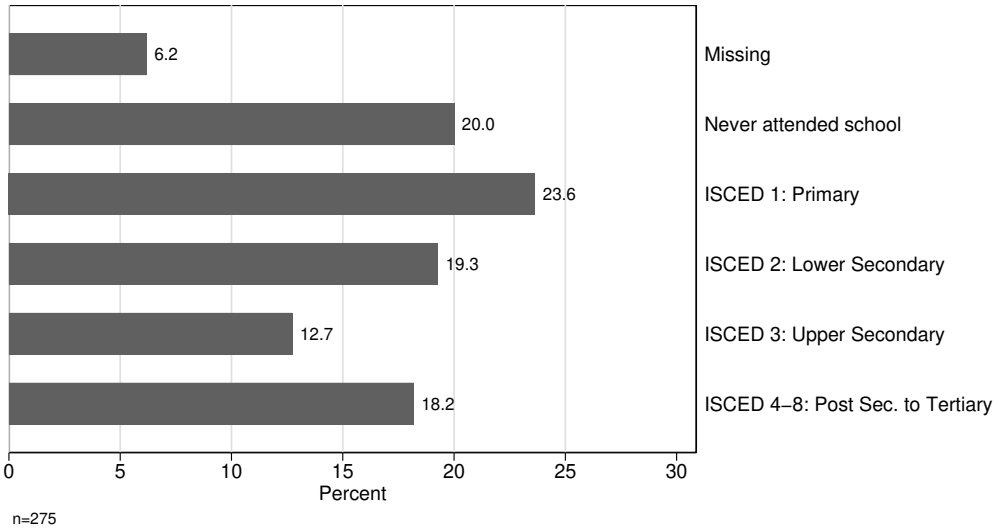


Figure 2.2.: Highest parental ISCED

three skill levels is 10.6 percent at lower service professional, 29.4 percent at skilled manual labour and combined semi-unskilled and farming at 17.6 percent (Brauns, Steinmann, and Haun, 2000). We therefore conclude that respondents are coming from mostly lower educated but relatively skilled labour households. Moreover, respondents' social origins slightly differ from their German counterparts.

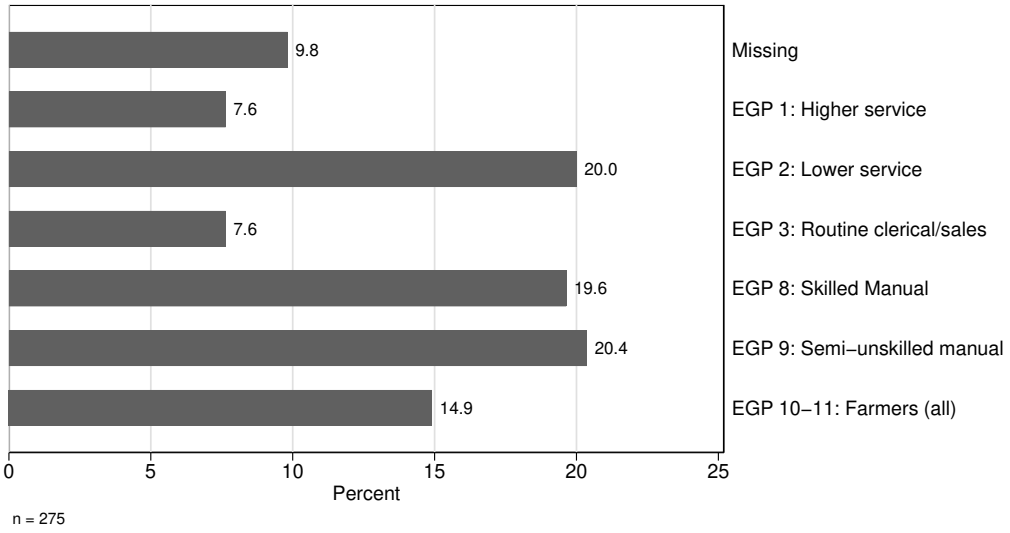


Figure 2.3.: Parental EGP

Life-cycle position: We now turn our attention to the current life-cycle position of our respondents through examining family structures and compositions. Of our sample, 46.9 percent are married (41.6 percent of men and 63.2 percent of women). In comparison, the IAB/BAMF/SOEP sample

shows a higher percentage of married couples (67 percent married – 63.5 percent of males and 81.9 percent of females). Moreover, 49.2 percent have children. Most of these individuals are married (88.0 percent). Yet, 78.8 percent of women in our sample have at least one child compared to 38.8 percent of men. Note that the percentages on having children are restricted to valid answers, 21 respondents (7.6 percent) did not answer the respective question. Corresponding IAB/BAMF/SOEP figures are: 59.6 percent of men and 83.9 percent of women have at least one child. This may be due to the fact that women in our sample on average are slightly older than men, or to inherent social norms that govern the age when women versus men are expected to have children. For our entire sample, we find that the average family size is 3.0 persons; dropping those that do not have children, the average family size increases to 4.7 persons. On average, each married couple has 2.8 children. This figure is close to the norm for the Syrian population, which in 2016 had a fertility rate of 2.9 (births per woman) and Syrian asylum seekers figures in other countries (Lebanon- 2.9 children and Jordan- 3.0) (Krafft et al., 2018; Petzoldt, 2016; Saiid et al., 2016; Syrian Central Statistics Bureau, 2018; World Bank, 2018). On average, since the start of the civil war in Syria in 2011, the fertility rate has been at 3.1 births per woman. Comparatively, in Germany in 2016, the aggregate fertility rate was 1.5 births per woman (DESTATIS, 2018). Hence, on average, Syrian families, including those who came to Germany, are larger than their German counterparts are.

However, we must not forget that a substantial share of respondents does not cohabitate with their complete immediate family at the time of data collection. 31.8 percent of respondents who are married did not live with their partner. The vast majority of them (94.1 percent) would like to bring their partner over. Out of the respondents who have children, 36 percent did not live with (all of) them at the time of data collection. Again, the majority expressed the wish to bring them to Germany, though at a lower rate of 80.0 percent. These figures correspond to those found Germany-wide by the IAB/BAMF/SOEP study (92.4 percent for partners) but are slightly higher when it comes to children (71 percent). The range of time our respondents have been in Germany is 2-46 months; the mean is 18.1 months. However, the majority (60 percent) have been in Germany from 16-26 months.

Thus, we find that Syrian refugees in Bavaria are mainly young and over half of them are single. Of those who have families, the household size is larger than their German native counterparts. Most have also been in Germany for over a year.

Educational attainment: Around two thirds of our respondents do not consider themselves finished with their education before leaving Syria (57.4 percent of women and 62.8 percent of men). One reason for unfinished educational careers is relocation due to the civil war in Syria. However, previous research indicates, in pre-war times, a substantial share of Syrian youth, 29 percent, left the education system with primary or incomplete secondary education (Gebel et al., 2012).

Figure 2.4 shows the distribution of the highest education level achieved or studied in by gender. We find in our sample that the levels are relatively low compared to Germans. Overall, 5.1 percent have never attended school and 22.2 percent have studied at the primary level. The majority, however, has studied up to lower secondary education. 28.7 percent have been in secondary

education (ISCED 2), followed by upper secondary education (ISCED 3) at 25.9 percent. Moreover, 15.3 percent of our sample has been in tertiary education. Regarding degrees completed, only 17.5 percent have completed upper secondary education and 12.7 percent hold some form of post-secondary or tertiary degree.

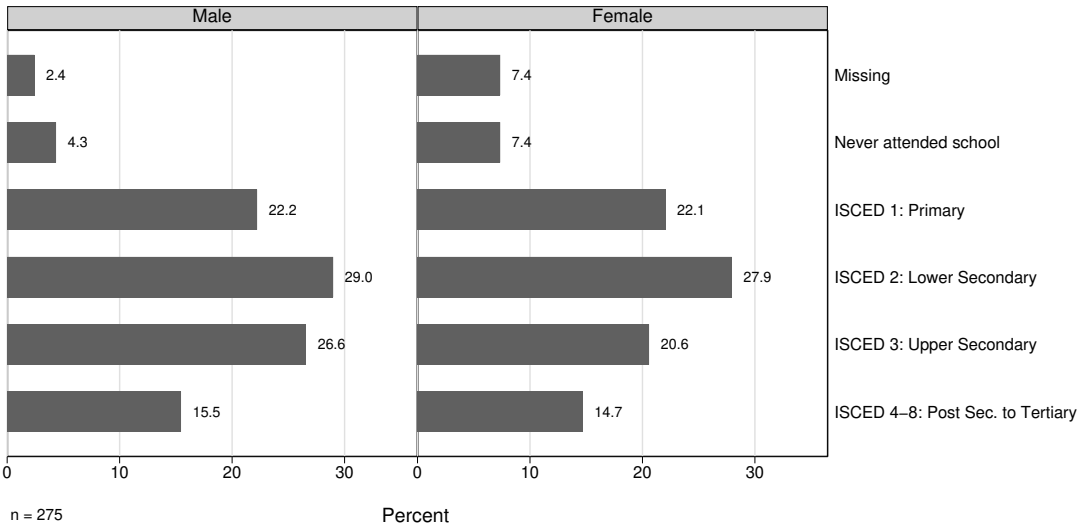
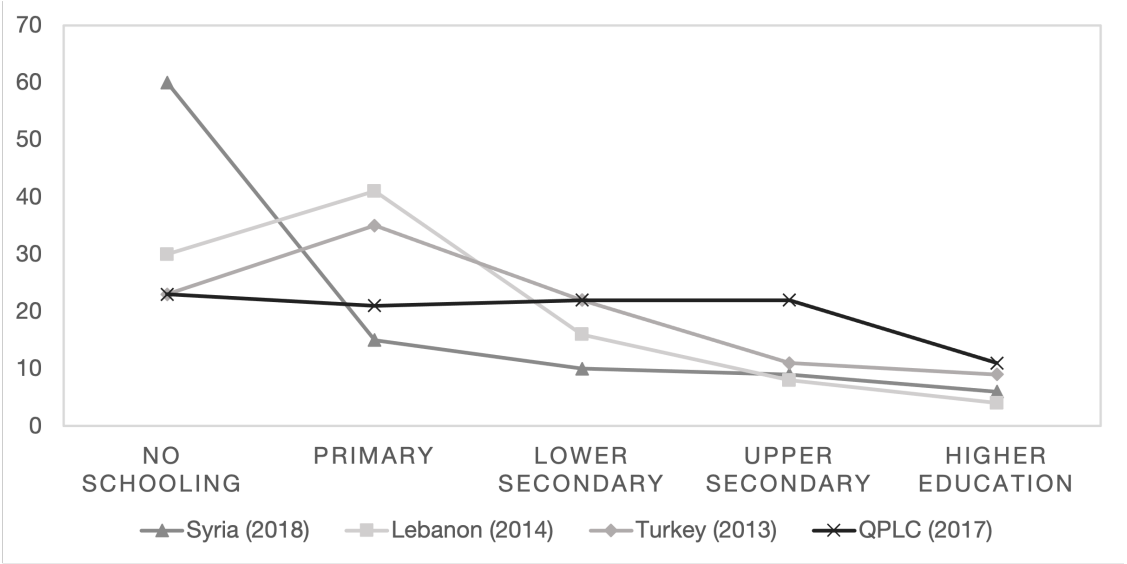


Figure 2.4.: Respondents' highest level of education (ISCED) before migration

Our findings are mostly in line with the IAB/BAMF/SOEP data, except for tertiary education where the completion rate is higher, in that sample, at 20.6 percent (Brücker et al., 2016). The fact that in our sample more people completed a lower or upper secondary degree seems to be driven by the younger cohort (18-30 years old) which are the majority of our sample. These findings mirror data on youth (15-24 years old) in Syria in 2009/2010, where the corresponding percentages at each ISCED level (completed) are: ISCED 1- 22.8 percent, ISCED 2- 25.8 percent, ISCED 3- 17.9 and ISCED 5- 8 (tertiary) - 10.7 percent (Gebel et al., 2012; Øvensen and Sletten, 2007). They also mirror findings of Syrian refugee populations in transit countries, see Figure 2.5. Interestingly, when looking at population statistics offered by the Syrian Statistics Office of achieved education for people aged 15+ in 2011, we witness a different picture. They report that a third of the population is illiterate, while a further 28 percent are able to read and write but do not have any formal education degree (Syrian Central Statistics Bureau, 2018). The percentage of people who have a formal degree decreases the higher the degree, with finally two percent acquiring a tertiary degree. These findings suggest a selectivity of Syrian migrants across the migration path to Europe, where more educated individuals reach Germany, or are perhaps "early movers", while the less educated travel closer to their country of origin or decide to stay in the country.

The differences witnessed within educational levels across the migration path also suggests that those who are reaching Germany are most likely those with the capabilities available to make it, and/or those with the highest probability in the family to be able to gain enough financial means to pay for the trip for other family members, or otherwise support them. However, it is clear that Syrian refugees in Germany are indeed a highly selected group with overall higher education than their Syrian counterparts in transit countries and Syria itself. There are also differences



Notes: Grade grouping by studies are as such: *Syria*: no schooling (illiterate, read & write), primary, lower secondary, upper secondary, higher education (certificate, university) (Syrian Central Statistics Bureau, 2018). *Lebanon*: no schooling (illiterate, read & write), primary (primary), lower secondary (intermediate), upper secondary (secondary), higher education (university) (ILO Regional Office for Arab States, 2014). *Turkey*: no schooling (illiterate, literate), primary (primary school), lower secondary (secondary school), upper secondary (high school), higher education (AFAD, 2014). *QPLC*: no schooling (never attended school), primary, lower secondary, upper secondary (upper secondary general & vocational track), higher education (certified assistant, technical institute, Bachelor, Bachelor Engineering, Diploma, Master, doctoral degree).

Figure 2.5.: Educational degrees of Syrians across countries.

between the sexes with fewer women than men achieving most defined levels of education (except for post-secondary-non-tertiary education). This is the case for our data, data on refugees in transit countries, as well as the nationally collected data of Syria. Of those who did study up to a bachelor's degree or higher in our sample, the most common major was law/legal studies (12.2 percent) followed by teacher training (9.8 percent) and then business administration (7.3 percent).

Hence, when compared to West European countries, similar to their parents, our respondents achieved lower levels of education. We also witness a disparity between genders regarding the level of achieved pre-migration education. Moreover, the comparison with data on Syrians in different countries suggests that those making it to Europe are higher educated.

Labour market history: We concentrate on the longest work spell of respondents to assess labour market skills. Only 26.5 percent of women have worked compared to 80.7 percent of men. These figures correspond to Syrian national statistics data. The adjusted unemployment rate for men and women (taking out those who are not seeking work) is 27.2 percent and 76.5 percent respectively (Syrian Central Statistics Bureau, 2018). We observe that around 12.0 percent of those who have worked in our sample stayed one year or less in their longest paid job (10.2 percent stayed less

than six months). Moreover, the majority (50.0 percent) have been less than five years in this work position (19.6 percent of the entire sample). This is mainly due to the age structure of our sample coupled with the abrupt truncation of their work life in Syria. Indeed, 45.9 percent of those who worked identified some aspect of the Syrian Civil War as the main reason for leaving their job. This includes violence from the war (23.8 percent), decision to flee the war (12.4 percent), avoidance of military service (3.8), economic crisis due to current state of the country (2.7 percent), political detention/harassment (1.1 percent) and firm closure/destruction (2.1 percent). This amounts to 31 percent of the entire sample.

We find that the most frequent type of work conducted by our participants, taking into consideration only those who have worked, is craft and related trades (major ISCO group 7 : 37.3 percent). 11.4 percent have worked in construction related work, while 6.4 percent worked as motor vehicle mechanics and repairers and 8.6 percent as a tailor or dressmaker. The second most common occupations fall under service and sales (major ISCO-08 group 5 : 16.8 percent), where the most common job was as a shop assistant (7.6 percent). Finally, a substantial share was in professional occupations (major ISCO group 2 : 10.3 percent), of which 2.2 percent were accountants and 3.2 percent were school teachers. Only 5.4 percent of those who worked were in managerial positions of any kind (production and service management positions). Comparing our results to the International Labour Organization's (ILO) identification of employment into the three major economic market sectors, agriculture, industry and services, we find that we have a higher number of individuals who have worked in the industrial and services sectors as compared to the Syrian national average. The ILO records the percentage of total employment in respect to each major sector in Syria in 2011, i.e. prior to the onslaught of the civil war, as: agriculture- 13.2 percent, industry- 31.4 percent and services- 55.3 percent (these statistics are based on modelled ILO estimations as the actual national statistics were not provided). We see that 46.9 percent of respondents in our study who worked, worked in the industrial sector. However, only 3.8 percent of those who worked did so in agriculture, leaving the rest (49.3 percent) to work in the service sector. Hence, in addition to being selective with regard to higher education, our study suggests that Syrians who came to Germany are also selective with regard to their employment history. In fact, when converting the ISCO codes into the EGP scheme (see Figure 2.6) in terms of skill level, we find that most of the respondents who have worked prior to migration from Syria fall under the skilled manual labourers- EGP category $8-$ (34.1 percent). This is followed by 21.6 percent under semi-unskilled labour, EGP 9; while, 16.8 percent exhibit lower service skill level, EGP 2.

The findings provide a few takeaways; first, respondents have a truncated work history at an early age and second, the majority who worked took part in skilled labour. Third, labourers that are more skilled made their way to Germany compared to the general Syrian population.

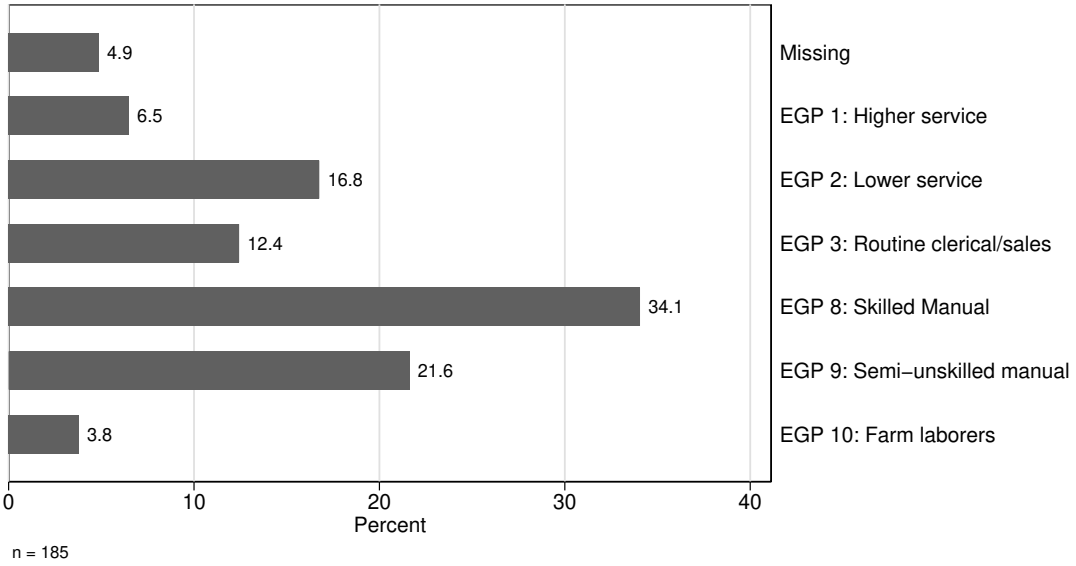


Figure 2.6.: Respondents EGP

2.1.3. The full picture: accurate assessment of potentials and additional determinants of integration

The previous section presented comparisons using sophisticated coding schemes for education and work experience. These are informative and suggest that many Syrians have the potential to integrate into the German labour market. Given the often-truncated education careers and differences in the education system and labour market, it remains, however, unclear how easily Syrian refugees can replace the large cohorts of baby-boomers in Germany, who will be leaving the labour market soon. To address this, as part of our study, we measured pre-migration human capital assets using a battery of tests. These tests allow objective measures and comparisons at least for the selected dimensions of skills. For example, we can directly compare this to a sample of baby-boomers and to norm data on students in secondary schools in Germany. Moreover, a concern often voiced is that the conditions in Syria and on the often-hazardous journey to Europe, manifests in health problems that in turn may hinder integration. To address this concern, our survey included measures on health, potentially traumatic experiences and resilience.

Measuring educational qualifications: As a first means of objectively measuring skills we examined simple literacy and numeracy capabilities through conducting two tests. The numeracy test was taken from the Survey of Health, Ageing and Retirement of Europe (SHARE). This test asked respondents to count down from 100 in intervals of seven. We find that almost half of our sample (46.2 percent) was able to complete this task without calculation failure (men: 49.3 percent, women: 36.8 percent). 17.1 percent of our sample completed the task with only one mistake. Yet, this still leaves a third of the sample that made two or more (out of a total of five) mistakes. Examining these results in light of past educational attainment, we find that those with lower levels of education scored lower on this test. We also witness that women are performing

worse than men (16.2 percent of women had none right compared to 4.8 percent of men). This is not surprising as we saw that women, on the whole, acquired less levels of education in their home country. We compare these results to those of the latest released wave (wave 6) of the Survey of Health, Ageing and Retirement of Europe (SHARE) (Börsch-Supan, 2018) to see how well our sample did on this exercise. We observe that our sample performs relatively worse than Germans aged 50-67 (the baby boomer generation) in SHARE which had corresponding levels of 70.5 percent with no calculation error and 16.8 with only one error (Börsch-Supan, 2018; Börsch-Supan et al., 2013). The overall rates for the entire sample are: 59.3 percent with no failure and 14 percent with one. Comparatively our sample performs similar to SHARE respondents from Mediterranean countries (Italy, Greece, Spain, France, Slovenia, Croatia and Israel). In this group 53 percent complete the task with no mistakes and a third make two or more mistakes (Börsch-Supan, 2018).

A second test looked at the literacy abilities of respondents. We asked all individuals to read the same text (four sentences) in Arabic that explained a proceeding task. The text used simple words and grammatical structures. Interviewers were then asked to note if individuals were able to read the text given in the allotted time and if not, note the reason the respondent gave for being unable to read it. Afterwards, we asked interviewers to note if they believed the reason the respondent gave was truthful or, if through other tasks (e.g. reading show-cards used throughout the interview), they noticed that the respondent could not read. 16.7 percent of our sample was unable to read the instructions in the allotted time. This corresponds to the education levels that we find. Moreover, in 9.1 percent of the cases respondents answered that they were unable to read when asked why they did not read the text (the rest who could not read stated that they did not have their reading glasses or simply did not provide a reason). Only in 2.9 percent of the sample did interviewers note that, contrary to the reason given by the respondent, the respondent seemed unable to read. Hence, when it comes to numeracy and literacy, we find that respondents' skills correspond to the stated educational levels.

To measure fluid and crystalline intelligence we conducted two tests developed by the Institut zur Qualitätsentwicklung im Bildungswesen (IQB). To test the former, a task was designed which encompassed a series of images where respondents were asked to identify the pattern in a sequence of pictures and then correctly choose the two consecutive images (figurative test). This test was designed to capture reasoning (Carroll, 1993) and has the advantage of being language and culture independent. For crystalline intelligence, a selected subset of items of the BEFKI test by Schipolowski et al. (2013) was used. A series of single choice knowledge questions were asked that gauged the knowledge base of our sample using concepts that are globally covered in science curricula (declarative knowledge test). Declarative knowledge measures like the BEFKI test are predictive for success in the educational system and labour market (Schipolowski and Edele, 2017). The first test consisted of 16 tasks, while the second consisted of 42 items, all varied in difficulty. We implemented two changes in the second part of the fieldwork due to the difficulty encountered by most of our respondents, and hence greater item non-response, as well as time constraints. In the figurative test we switched half the tasks to slightly easier items. We also reduced the number of questions in the declarative test, dropping the more difficult ones. For consistency, and to allow linking the test scores to normed samples, we kept a sufficient number of items to have a base group for the entire sample (this equates to eight items for the figurative test and 36 items for the declarative test). The figurative test showed inconsistent results. There is little in terms of an age gradient in the test scores and most respondents could solve only very

few tasks. In the IAB/SOEP/BAMF study, a similar test was administered to children of refugees ages 11 to 17 with very similar results (Schipolowski and Edele, 2017). We therefore focus on the declarative knowledge test only.

81 percent of respondents partook in the declarative test. The number of correct answers by any given respondent ranges from 0-29 (out of the 36 questions that all respondents saw). Figure 2.7 shows the distribution of test items solved. The test difficulty was appropriate, there are no ceiling or bottoming effects visible. The reliability of the test is, hence, sufficient.

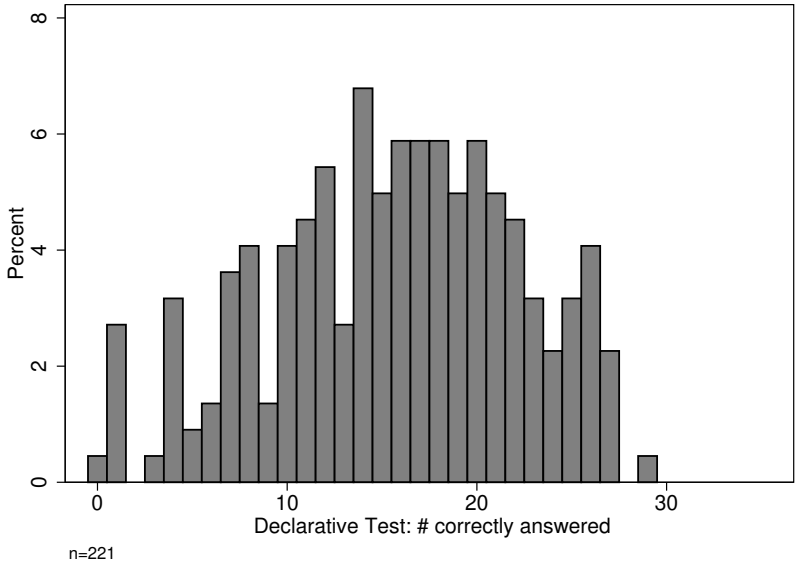


Figure 2.7.: Declarative test results out of 36 (for those who completed test)

The IQB and others use the BEFKI routinely for testing student performance in German schools. Therefore, cohort as well as gender specific norms are available from a total of $5,708$ students in grades 8 to 10 (Wilhelm, Schroeders, and Schipolowski, 2014). Moreover, a short version of the test was evaluated with a representative sample of $1,134$ adults (Schipolowski et al., 2013). This allowed making the selection of test items used in our study comparable to a synthetic norm of 9^{th} graders across all types of schools in Germany (with the exception of 9^{th} graders in special needs schools). Figure 2.8 compares the test scores of our sample, split by gender, to the of 9^{th} graders' norm in Germany. The norm distribution is z-standardized with a mean of 100 and a standard deviation of 10. On average our male respondents scored 10.4 points lower than 9^{th} graders in Germany, female respondents mean score is 12.1 points lower, i.e. a bit over one standard deviation. The gender difference is not statistically significant ($t = .72, p > .24$). Moreover, our respondents test score distribution is more heterogeneous (standard deviation of 14.7 compared to 10.0 in the norm sample). Figure 2.8 suggests that this is especially due to the lower end of the distribution.

Recall that we compare the Syrians in our sample to 9^{th} graders in Germany. Therefore, we repeated this part of the analysis and only focused on the subset of 190 persons who completed or studied at least at the secondary level. Figure 2.9 shows the test results. Again, the difference between female and male respondents test scores is not significant ($t = .75, p > .23$). The

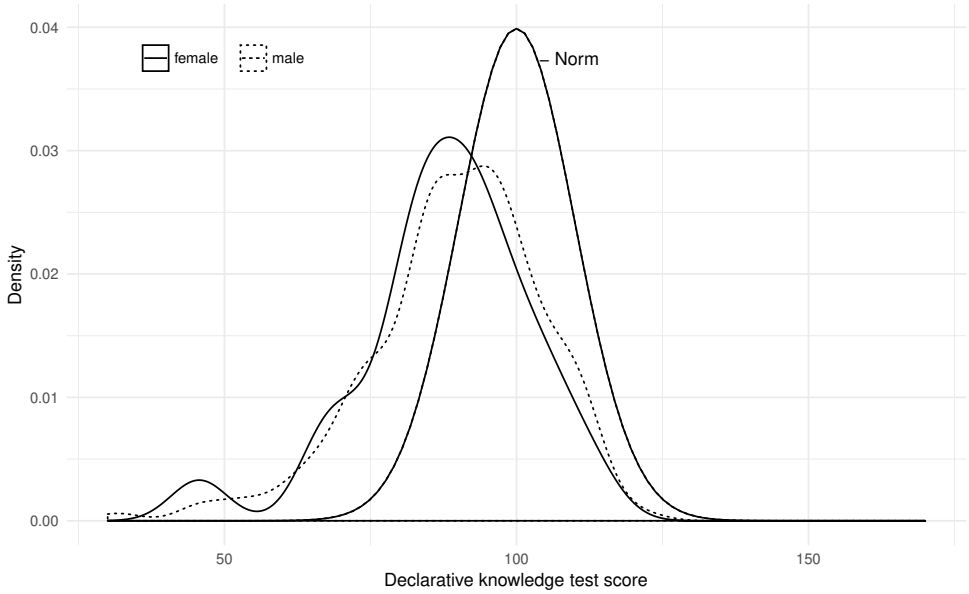


Figure 2.8.: Declarative test scores by gender, compared to 9th graders in Germany

very low-test scores observed above are mostly due to those not having studied or completed secondary school level. Still females mean test score is 91.1 and significantly lower than the norm ($t = -55.4, p < .01$). With a mean of 92.8, males again score a bit higher, but still significantly lower than the norm ($t = -95.8, p < .01$).

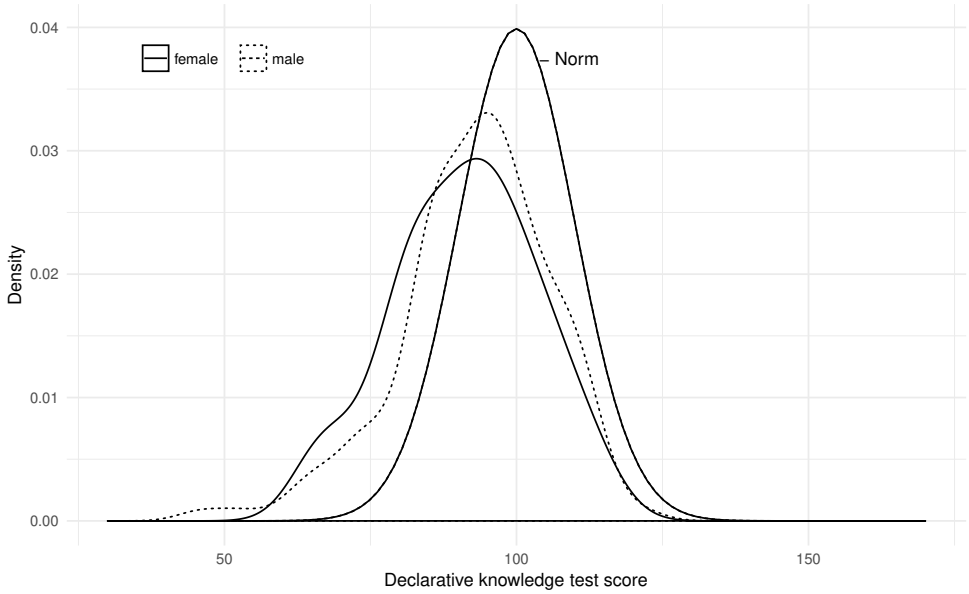


Figure 2.9.: Declarative test scores by gender for Syrians with at least secondary school level, compared to 9^{th} graders in Germany

We infer from these findings that although there is, indeed, a knowledge skill base within the surveyed population that has wide overlaps with 9^{th} graders in Germany; on average the respondents perform worse, in terms of this test than their German counterparts.

Other skills: We collected information on training programs, skills and languages that respondents may have acquired during their working life. We asked respondents if they have worked with: heavy machinery, manufacturing equipment, computers or in a care-taking capacity. For computers we differentiated usage into five aspects highlighting differing computer skill levels: text-based software usage, media design software usage, statistical software usage, website programming capacity and advanced programming capacity. The largest skill base lies in the operation of heavy machinery, which includes farming and construction, with 29.2 percent of previously employed respondents having experience in this area. This corresponds to 37 percent of those who worked in the farming or construction sectors. The second most common skill is using computers for text software (20.0 percent). We find that only 3.8 percent of those previously employed have worked with more advanced programming software such as JavaScript, Python, C, etc. Moreover, less than four percent of them have performed care-taking activities (children, elderly, etc.) in a professional capacity. These measured additive skills coincide with the labour history we saw in the previous section. There are manufacturing skills present in the sample that are useful in the German labour market; yet there are other skills such as care-taking abilities or advanced computer skills which may not be abundant.

Health and traumatization: First, we start by looking at a subjective measure of physical health. We asked respondents to rate their health on a Likert scale ranging from "excellent" (1) to "poor" (5), at the time of the survey (current health) and twelve months prior. The mean for each of these questions is 2.6 (between very good and good). 22.2 percent reported that their current health was either fair or poor, while 44.4 percent rated their current health as either excellent or very good. We are able to juxtapose our results to an analogous self-reported health measure for the German population of similar age to our sample using SOEP 2016 data. We compare our results with those aged 18-50, which covers 90 percent of the age range in our sample. Although a slightly different Likert 5 point scale was used - from "very good" (1) to "bad" (5), they find that 61.3 percent of German nationals aged 18-50 rate their current health as very good or good, while around 12 percent rate it as either poor or bad. This difference could also be explained by the slight difference in the scale labels used. The majority of our sample (54.9 percent) state that their health has stayed stable over the last twelve-month period (no change in health level), 18.6 percent report better subjective health and 21.5 percent worse health (for 5.1 percent either variable is missing). There is no considerable difference in reporting between age groups. Those who state that their health benefited from the last twelve months report on average larger health gains compared to those who report decreasing health outcomes. Those who report lower health outcomes in the last 12 months have a mean of -1.44 decrease on the Likert scale; while those who report benefiting exhibit on average an increase of 1.82. We also find that there is no significant difference between reporting an increase or decrease in health outcomes given the length of stay in Germany. From these results we are able to determine that our sample reports worse on self-reported health than their German counterparts. Even given the slight difference in the scale used, this may be due to

the migration path to Germany that these individuals may have followed or that for the most part our sample consists of people living in state and city run facilities.

We assessed mental health in two ways: we asked respondents whether they experienced potentially traumatic events that may have had adverse consequences and used the Brief Resilience scale (Smith et al., 2008). We constructed the traumatization module based on literature on the association between prior faced adversity and present mental health (Shrira, Shmotkin, and Litwin, 2012). Our module evaluates the effect of different traumatic experiences, such as witnessing a terrorist attack or the death of a person. The questions were split into events that may have happened to the respondent directly, events they have witnessed that occurred to a close family member or friend and events that they witnessed where a stranger was harmed. We then asked respondents to rate how these events may have affected them (great effect, moderate effect, little effect). Great care was exercised in the training of interviewers, through the use of identifying physiological reactions or voice patterns to reduce the risk of re-traumatization and to avoid socially desirable responses.

Table 2.2 shows the list of potentially traumatic experiences asked and what percentage of respondents reported the respective experience. Note that in the QPLC study, we asked 12 items. Here we report 10 of these items, taking out the two concerning "having something stolen". We do so as arguably these events do not compare in magnitude to the 10 items we report here. Moreover, it shows the percentage of respondents reporting an experience who classified it as having had a great effect on their lives. The majority of our sample (80.7 percent) stated that they have experienced at least one of the potentially traumatic events. Moreover, 71.3 percent state that they have had more than one event occur to them or others. Moreover, on average 64.8 percent state these events have had a great effect on their life. What we can take from these results is that there is a high prevalence of traumatic events which have had a great effect.

Table 2.2.: Traumatic experiences reported

Item: Have you ever...	N	% reported	% reported had great effect
... been wounded in (civil) war, civil war, or military action	258	6.6	52.9
... been wounded in a terrorist act	253	5.5	64.3
... been at risk of drowning from a sinking boat	251	51.4	59.7
... been at risk of death due to illness or serious accident	255	18.4	61.7
... witnessed serious injury or death in (civil) war, or military action	251	43.4	70.6
... witnessed a terrorist act	256	32.8	66.7
... lost very close friend or relative in (Civil) war, or in military action	252	67.1	71.6
... experienced injury or death of very close friend or relative in terrorist act	252	42.9	73.1
... had very close friend or relative at risk of drowning from a sinking boat	254	42.9	60.6
... had very close friend or relative at risk of death due to illness or serious accident	253	28.9	67.1

To measure resilience we also conducted the Brief Resilience Scale (BRS) developed by Smith et al. (2008) to evaluate the ability of a person to bounce back or recover from stress. The BRS comprises of six items, three positively phrased and three negatively phrased sentiments about being able

to "bounce back" from hardships. In calculating the level of resilience using the reverse mean scoring system implemented by Smith et al. (2008), we find that scores tend to be skewed to the right (score $5-$ high resilience), see Figure 2.10. We observe that the majority of our sample, 60.4 percent, score between $3.0 - 4.3$, which is considered the average resilience level. 18.9 percent scored a high level of resilience (between 4.31-5.0).

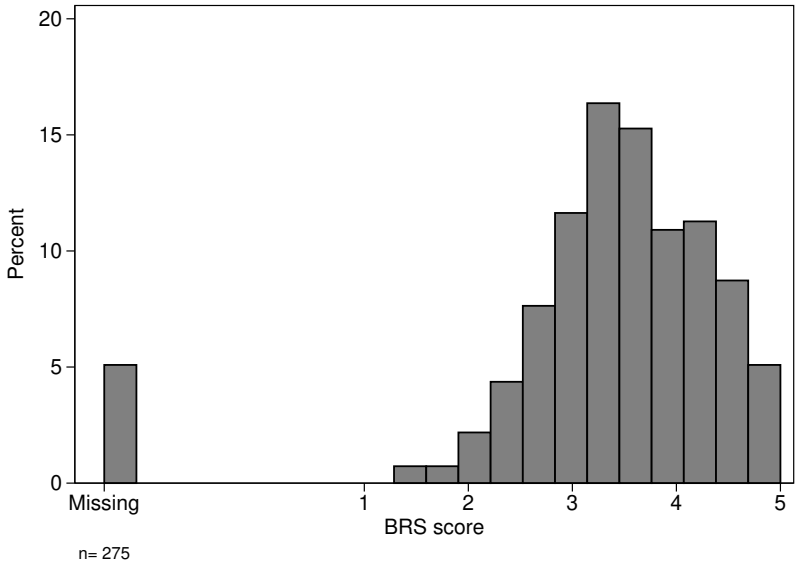


Figure 2.10.: Brief Resilience Scale (BRS) scores

2.1.4. Looking to the future: investments and expectations

The last goal of the study was to measure investments into integrating in the host country and respondents' expectations of future investments in central integration outcomes: language acquisition, job seeking activities, social interaction and emotional belonging.

Investments: A pre-requisite integration activity is language acquisition which opens up the ability to enter the host country's education and job market. It also allows for the ability to more easily interact with natives which facilitates other forms of integration: cultural, social, and emotional. First, we collected information on language course levels attended, see Figure 2.11. We find that 26.9 percent of our sample has not attended any type of language course since arriving in Germany. 50 percent of women have not taken a language course (compared to 19.3 percent of men). The majority of respondents are attending basic (A1) to lower intermediate (B1) level language courses. Moreover, similar to pre-migration education trends (see section 2.1.2) we find a concerted difference between genders regarding language course attendance, with more men attending advanced courses compared to women. The main reason given for not applying for or continuing to learn the German language is child-rearing responsibilities (37.9 percent of females and 5.1 percent of males).

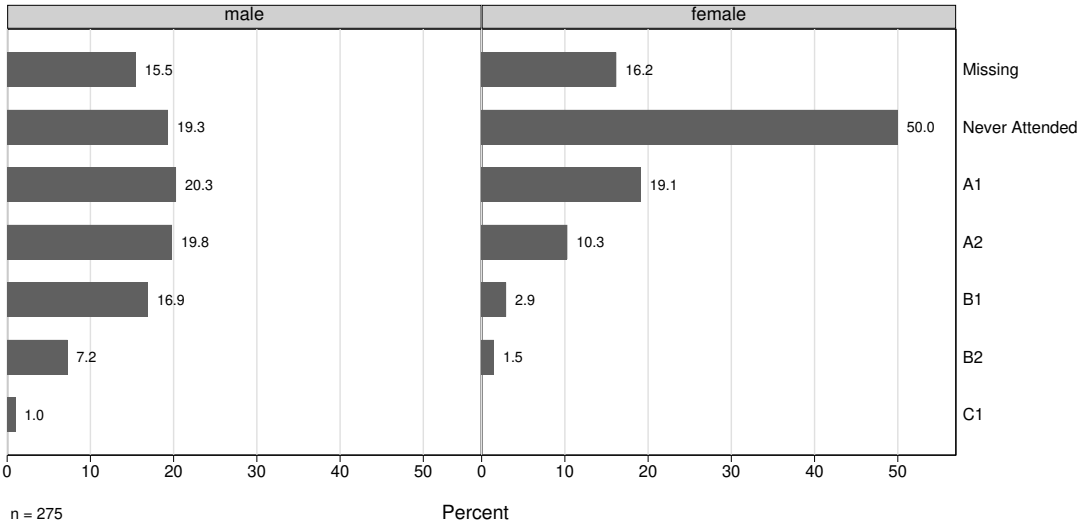


Figure 2.11.: Highest German language course level attended by sexes

Concentrating on the relation between intended length of stay and language level attendance, we discover that those who stated they do not know how long they would stay in Germany more often did not yet attend a language course compared to those who intend to remain in Germany for a longer time (see Figure 2.12).

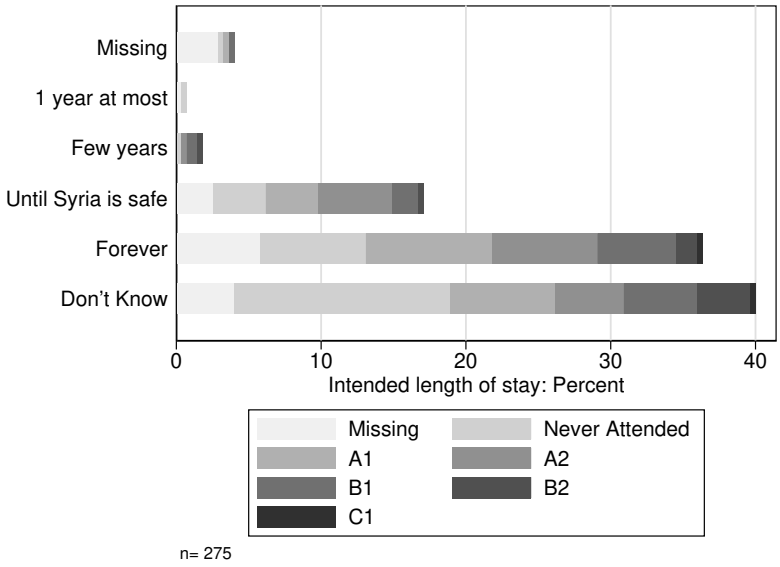


Figure 2.12.: German language course level reached given intended length of stay

In terms of language certificates achieved, 13.1 percent of our sample received an A2 certificate followed by 9.1 percent for B1 and 7.3 percent for A1 (note that 34.6 percent of our sample did not answer the question on language certificates achieved). This result is mainly driven by males

(15.5 percent of men for A2 compared to 5.9 percent of women). Therein, we see the propagation of differences in education between genders as was found in the country-of-origin context.

To test if the language course investments pay off, we included several short German language tests. As the results of these tests are highly correlated (Pearsons $R > .5, p < 0.01$), we present the results of the final component, a conversation test that had the highest participation. We asked respondents to take part in a very short and simple conversation about the weather, how they liked it and how it differs from their hometown. We then asked our interviewers to rate the conversation in terms of sentence structure, word usage and pronunciation. Scoring followed a predetermined scaling format and used a five-point grading scheme adherent to the German grading system [5: insufficient to 1: excellent]. This allowed us to achieve an appraisal of the actual language abilities of individuals. On the whole, we find individuals scored relatively low with 39.3 percent of our entire sample achieving a score of five, i.e. failed to understand at all. The average grade within the sample is 3.67, i.e. rather poor. Although, the entirety of the sample performed poorly, on average, women did so significantly more than men with a mean score of 4.08 compared to men's 3.54. Looking at the correlation between performances on the conversation test and attendance of German language courses, we find that attendance is positive and highly significant (at .01 percent) correlated to test performance. Furthermore, language certificates are positively correlated to test performance (highly significant at the .01 percent level). We find that one more certificate level increases the conversation test score by 0.34 percent, which is the same for findings for an extra language course level.

In a similar manner to testing language abilities as a gauge for investment, we also looked at investments into understanding German culture and society. We conducted a small-scale (15-item) test based on the Leben-In-Deutschland exam. The Leben-in-Deutschland exam was designed by the federal government to test the integration level of potential permanent residents and naturalized citizens in regard to German history, culture and norms. Each respondent received, in a randomized order, 5 or 10 items. On average, respondents were able to answer 60.7 percent of the items they were presented with correctly. Once more on this test men score higher, they get on average 64.9 percent of items correct, whereas the rate for women is at 47.1 percent.

We see from these results that respondents are partaking, for the most part, up to basic German language education. The difference between men and women undertaking this investment are substantial, with men taking higher levels of language courses than women. Moreover, uncertainty in regard to intention to stay in Germany seems to relate to actual language acquisition. Finally, performance on language tests is low, which corresponds to respondent's declared language course level attendance. We also find that integration in terms of knowing the social norms and practices of the host society is also being undertaken.

One reason for some individuals not investing in receiving country specific language abilities may be the traumatic experiences experienced in Syria and on the journey to Germany. If coping with trauma is an obstacle, it should not only affect language investments, but also other integration activities. Therefore, we analyse the relation between potentially traumatic experiences and other dimensions of structural integration activities. These are language learning, education and/or job seeking. Language learning is operationalized as having applied for some form of German course, either as language or as integration course. Education is a binary indicator of currently continuing education or planning to do so. Job seeking is a binary indicator identifying those

who are currently in employment or who actively seek a job within the next 6 months. Table 2.3 shows probit regressions on these three structural integration activities. We find that traumatic experiences have no significant effect on all three activities. Indeed, our control variables: gender, age and length of stay in Germany play a larger role. Again, we find that female's investments are significantly lower on all three dimensions.

Taking into consideration the prevalence of traumatic events and their stated effect one may expect that individuals invest less in integration activities. Yet, given this analysis, we infer that although these individuals experienced traumatic events it does not seem to relate to integrative investments. This relation is looked at further in depth in chapter 4.

Table 2.3.: Traumatic experiences on integration activities

	Language	Education	Job Seeking
Traumatic experience: Self (great effect)	0.115	-0.037	0.030
	(0.227)	(0.231)	(0.220)
Traumatic experience: Family/friend (great effect)	-0.260	0.174	0.306
	(0.224)	(0.239)	(0.228)
Traumatic experience: Others (great effect)	-0.188	-0.264	0.015
	(0.243)	(0.225)	(0.218)
Time in DE (months)	0.070***	-0.006	0.030***
	(0.013)	(0.010)	(0.011)
Education (Ref: ISCED 1: Primary)			
Never attended school	-0.240	-0.591	-0.257
	(0.436)	(0.422)	(0.436)
ISCED 2: Lower Secondary	0.232	0.305	0.145
	(0.259)	(0.242)	(0.235)
ISCED 3: Upper Secondary	0.027	0.512**	0.254
	(0.256)	(0.248)	(0.237)
ISCED 4-8: Post Sec. to Tertiary	0.383	0.815***	0.506*
	(0.317)	(0.278)	(0.273)
Female	-0.983***	-0.415**	-1.193***
	(0.211)	(0.192)	(0.221)
Age	0.028***	-0.052***	0.010
	(0.011)	(0.010)	(0.008)
Constant	-1.203***	1.806***	-1.045***
	(0.423)	(0.410)	(0.394)
Observations	259	261	261
McFadden's R^2	0.229	0.180	0.139

Probit regression coefficients with robust standard errors in parentheses. $^{*}p < 0.10,^{**} p < 0.05,^{***} p < 0.01$

Expectations: We identify respondents' intended length of stay in Germany (in a previous figure, Figure 2.12). 40 percent of our sample state that they are unsure how long they will stay in Germany. The second largest response is "forever" (36.4 percent) followed by "until Syria is safe" (17.1 percent). To further understand people's human capital investment decisions with regard their intentions to stay in Germany we directly measured respondents' expectations regarding different human capital investments. We did this through two formats. For one part of our sample, we asked respondents to state their perceived chance of getting a permanent residence status

given three scenarios: a base level of no further investment, acquiring good German language skills and acquiring a secure job. For the second part of our sample, we concentrated further on education investments.

In both sub-samples we trained respondents in the concept of percent chance. We used the Hudomiet, Hurd, and Rohwedder (2018) battery of questions to first train and then test our respondents' understanding of the concept of likelihood, e.g. percent chance, see Table 2.4 for the training results. Our respondents performed on par with respondents of the Hudomiet, Hurd, and Rohwedder (2018), except for on the inverse probability questions.

Table 2.4.: Summary statistics of battery test

Variable	Mean	Std. Dev.	Min.	Max.	N
Percent chance of red ball (10 white & 0 red)	2.865	12.036	0	90	229
Percent chance of white ball (7 white & 3 red)	62.284	22.031	1	100	229
Percent chance of not raining (prob. of rain 70%)	31.714	13.404	0	100	224
Percent chance of rain in home town (50% chance of rain in home town & New York)	50.404	19.448	0	100	208

In our first set of questions, we asked 40 percent of the sample to give their base expectation that a person like them would earn the right to stay in Germany, in the form of a permanent residence, in three years without engaging in further investments. We find that the perceived likelihood of receiving a permanent residence in three years without further investment is on average 50.5 percent with a large standard deviation (28.3). With an increased investment of learning the German language we see an increase in the expectation to receive a permanent residence (69.4 percent) (see Figure 2.13). However, there is a stark difference in the distribution of the answers to this scenario. There is high skewness to the right, with a third of those answering this question placing the probability of receiving a permanent residence at 80-100 percent. The probability of receiving a permanent residence is even greater given the acquisition of a secure job. Here, most respondents identified that it is with certainty (100 percent probability) that one would gain a permanent residence in this case (the mean probability is 75.8 percent). In terms of expectations of returning to Syria after three years, the average is 29.2 percent probability of returning. The range of answers given is skewed to the left, with a little over 60 percent of the sample who answered this question giving a probability of 30 percent or lower for returning.

We asked the remaining part of our sample to identify their expectations of the probability to acquire a permanent residence, get a secure job and expected wages, given differing levels of educational investments. The educational investments were: no extra education (baseline), B1 language, B2 language, vocational training (the German "Ausbildung"), and university degree. We present here two cases: getting a permanent residence and getting a secure job. For analogy, Figure 2.14 outlines the results of the case of receiving permanent residence after three years. The distributions of the scenarios move from highly skewed to the left (low probability of receiving a permanent residence permit) to, progressively, high skewness to the right at the highest educational achievement- university degree (high probability of receiving a permanent residence permit). Of interest is that B1 and B2 language levels have greater variances, suggesting a higher level of uncertainty given these investments. On average, however, we see that respondents attribute 55.4 percent chance of receiving the permanent residence status given the B2 language

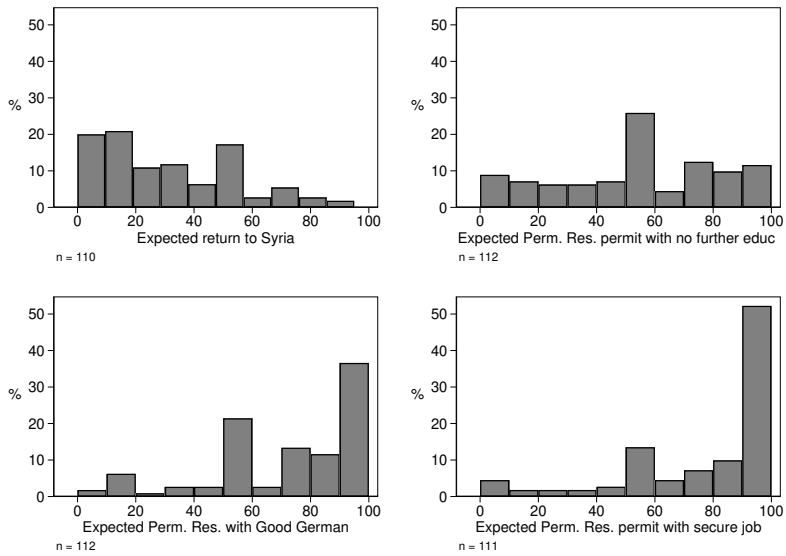


Figure 2.13.: Range of expectation to get a perm. res. given investments (Part 1)

level compared to 40.1 percent probability for B1. Doing an Ausbildung hikes the probability to 75.8 percent while a German university degree increases this to 86.4 percent.

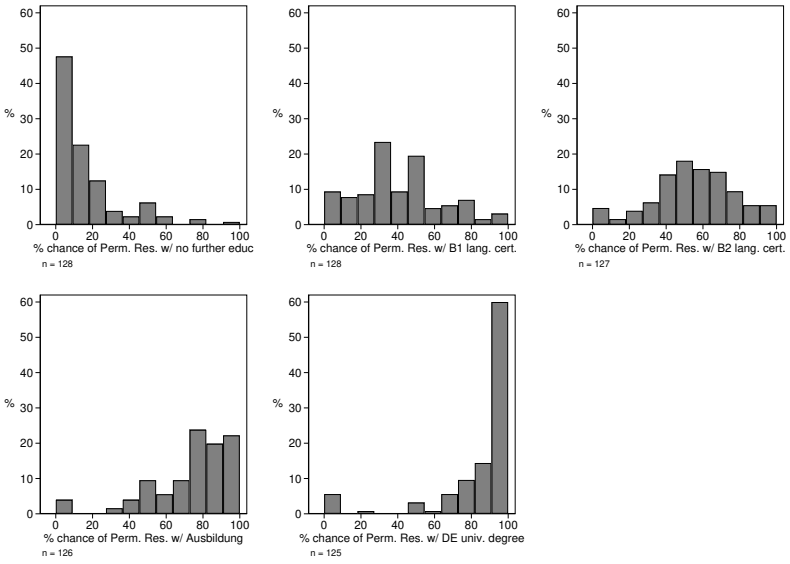


Figure 2.14.: Range of expectation to get a perm. res. given investments (Part 2)

We find a similar pattern regarding getting a secure job in Germany with more pronounced expectations when it comes to vocational education.[2] Indeed, on average, respondents attribute a similar high likelihood to finding a secure job in Germany whether one completes a university

[2] The figure for this set of questions are not shown as they do not have a direct comparison to the first sub-sample.

degree (88.6 percent probability) or an Ausbildung (84.3 percent). We find that just acquiring language does not translate to very high expectations for finding a secure job (B1 - 44.0 percent probability and B2 - 58.6 percent probability).

As an example of how expectations relate to investments, we present the first sub-sample's expectation/investment relationship results using the same dependent variables as above (see Table 2.5). The results imply that people who believe that gaining good German language skills would allow them to get a permanent residence invest less in looking for a job and those who believe a secure job would aide them in getting a permanent residence permit invest more in job seeking. This pattern is reversed, as one would expect, when looking at language learning activities, though the effects are not significant. For educational activities we find no significant effects of expectations.

Table 2.5.: Expectation on investment analysis

	Language	Education	Job Seeking
Exp (perm. res. w/ good German)	0.008	0.001	-0.019**
	(0.009)	(0.009)	(0.009)
Exp (perm. res. w/ good job)	-0.004	-0.001	0.017***
	(0.007)	(0.006)	(0.006)
Time in DE (months)	0.124***	-0.024	0.025
	(0.024)	(0.018)	(0.019)
ISCED 2: Lower Secondary	-0.032	0.179	0.612
	(0.465)	(0.411)	(0.387)
ISCED 3: Upper Secondary	-0.210	0.123	0.715*
	(0.438)	(0.408)	(0.375)
ISCED 4-8: Post Sec. to Tertiary	-0.203	0.334	0.226
	(0.560)	(0.452)	(0.467)
Female	-1.584***	-0.280	-1.459***
	(0.411)	(0.329)	(0.476)
Age	0.024	-0.064***	0.028**
	(0.016)	(0.015)	(0.013)
Constant	-1.841***	2.745***	-1.727***
	(0.673)	(0.649)	(0.616)
Observations	104	105	105
McFadden's R^2	0.379	0.199	0.182

Logit regression coefficients with robust standard errors in parentheses. Primary education is the omitted variable for education. Never attended school was dropped due to predicting success/failure perfectly, due to the small sample size. $^{*}p < 0.10,^{**} p < 0.05,^{***} p < 0.01$

Hence, our results indicate that the majority of our sample understood the concept of percent chance; therefore, the answers we garnered on the expectations that individuals have regarding differing investments are credible. We also see that respondents associate higher educational attainment with a higher probability of being able to stay in Germany or gaining a secure job. Moreover, when it comes to actual investments, expectations directly relate to which investment is favoured, e.g., seeking a job or engaging in further education.

2.1.5. Implications

The implications of a younger population arriving in Germany are manifold. First, this implies that there is great potential for individuals to take part in both the education and labour market as returns to investments may be reaped over a longer expected lifetime in Germany.

In terms of education, we observe that, although the majority of individuals have reached lower levels of education, most indicate that they do not consider themselves done. However, we also witness a clear difference in terms of educational attainment and desire to continue in education between genders. From our cognitive tests, we also find that the poor performance on test items indicate that targeted programs may be necessary to overcome the gap between German residents and Syrian asylum seekers. We can also infer that just collecting formal education achievements is not an accurate measure for skill.

Furthermore, we see that individuals are coming from, on average, relatively lower educated households where the great majority of main breadwinners worked in some form of skilled labour, in both service or craft sectors. We find these occupations mirrored in individuals own occupational histories. This may be an indication that skilled manual labour is entrenched as a feasible or desirable occupational choice. Moreover, we find that the most common type of work conducted by respondents was skilled craft, manufacturing and farming. A fraction of these individuals possesses skills that can be more readily used in the German context. This leads us to infer that individuals might be malleable for retraining to the German work context as a result of both their younger age as well as their skilled crafts work experience.

Initial analysis suggests that there may be no significant effect of traumatic events on integration activities. A possible explanation is that perhaps selection still plays a role into asylum seekers' migration patterns, e.g. the more resilient individuals tend to take the more precarious route to Europe. Testing this explanation unfortunately is beyond the capabilities of our data.

We see the same predominant pattern of differences between genders in terms of integration investments in Germany. More men than women are participating in language courses, attending higher language levels and acquiring language certificates. Hence, we see the propagation of educational attainment differences between genders in the host country. Moreover, less people are in intermediate and advanced language courses. This is partially due to the time respondents were interviewed. However, this can also partially be attributed to the fact that language courses are only subsidized up to the lower intermediate (B1) level making it harder for people with constrained budgets to participate in further language learning in most venues. Low performance on our language tests mirror completed levels of language courses, but also point to possible further investments needed. Hence, when it comes to actual achieved integration, we find that although investments are undertaken, they are not undertaken equally across the entire sample.

Concurrently, respondents are associating higher integration efforts with higher probability of being able to stay and provide for themselves. Indeed, respondents show an understanding that, in Germany, getting a vocational education ("Ausbildung"), not just a university degree, is a viable option for acquiring a secure job. However, there seems to be a trade-off between job acquisition and education. Those who believe that achieving higher levels of education will lead

to a more permanent status in Germany in the long run, tend to substitute educational investment against seeking a job, and vice versa for those who believe that occupation will lead to a permanent residence. However, further analysis is needed to identify the mechanisms of these decisions and to provide policy relevant suggestions in how best to address this uncertainty in the Syrian asylum seekers in Germany.

2.1.6. Conclusions

The QPLC project set out to answer three main questions: what the life courses and corresponding capabilities of asylum seekers are, what the hindrances to integration may be, and what the expectations that they have are and how this informs their integration investment decisions. In order to answer these questions, we conducted a survey on the largest group of asylum seekers, Syrians aged 18 or older living in and out of group housing in Bavaria. While our sample is smaller than intended with 275 observations, the richness of the information we were able to collect lends itself to interesting insights regarding these inquiries.

There are five trends that are prominent in our analysis. First, in regard to the demographic characteristics of this population, our results imply that Syrian Asylum seekers may be beneficial in bolstering Germany's aging population through providing a younger workforce. However, refugee migration is not a complete solution to the demographic aging challenge facing many European countries (Börsch-Supan, 2002, 2017). Given the characteristics of our sample's previous work experience, we find that their skills may be well suited, or malleable, to the German labour market. Second, we find that traumatic experiences do not automatically translate to hindrances for integration. Third, we see through the use of our cognitive tests, that there may be a skill gap between natives and this population that would need to be addressed. Fourth, this skill gap does not only exist between natives and Syrian asylum seekers, but also between Syrian men and women. To that end, further work may need to be done on how to address this disparity, which seems to be hampering the human capital investments that women are undertaking in Germany. Fifth, subjective expectations regarding which investments lead to a higher probability of gaining a permanent residence appear to influence the type of investments undertaken. What seems to be factoring into investment decisions is uncertainty, where the more uncertain a person is about their prospect of remaining in Germany the less amount of long-term investments are undertaken.

In the results section we look further at the role that subjective expectations play in acquiring host country language. We also examine in more detail the role that traumatic events play in short term integration.

2.2. Survey on Migrants' Expectations

The Survey on Migrants Expectations (SME) was designed to look at the other side of the coin regarding incoming asylum seekers. Whereas the QPLC study examined a group of asylum

seekers who were relatively "safe", meaning that they on average received secure legal statuses, the SME study looked at a group that often received less stable legal statuses.

The study measured similar aspects as the QPLC, namely life courses, integration outcomes and beliefs on future outcomes. In this way the two surveys are mostly comparable. However, the SME study diverged from the QPLC study on several topics in order to capture nuances present within insecure legal statuses. Namely, the SME study recorded a more detailed legal history of its respondents in Germany, had more in-depth questions on legal vulnerabilities and interactions with authorities and focused the expectations section on the decision to stay without the legal right to do so rather than on investment outcomes. This, in turn, meant that we conducted less testing of skills and the traumatization section was dropped. The strength of this survey, however, is that it allows us to adequately measure the role that subjective beliefs play in the case of uncertainty. In the following, we briefly discuss the methodology used to collect the data for this survey and the sample characteristics. We leave the in-depth discussion of the expectations module to chapter 6.

We find that there are significant differences along integration outcomes, e.g. language proficiency, education and labour force participation across genders, legal statuses and cities. Women are less likely to have invested in and are less proficient in the German language, and are less likely to be in education and/or employed. People with insecure legal statuses are similarly less likely to invest into language and education but are more likely to be employed. Lastly, individuals in Munich are more likely to substitute education for employment compared to those in Berlin and Hamburg, and are also less proficient in the German language. In the next section we discuss the survey methods used and other operational matters. Section 2.2.2 outlines the life courses of the sample of Afghans interviewed. Section 2.2.3 highlights the differences in legal trajectories found, section 2.2.4 explains the integration outcomes of the sample, while section 2.2.5 concludes.

2.2.1. Survey operations and methods

Survey operations: The target population is composed of individuals who meet four criteria: they have an Afghan citizenship, are aged 18 or over, arrived in Germany for the first time in 2014 or later, and live in one of the urban areas of the study. Due to budget constraints, we targeted the three urban areas with the highest numbers of Afghan citizens: Berlin, Hamburg and Munich. A random sample of the population of interest fulfilling the eligibility criteria was drawn from the population registry (*Einwohnermeldeamt Melderegister*) of each of the cities. These individuals were invited by post to partake in our study in one of several possible locations in Munich, Hamburg or Berlin. Participants were compensated with 20 Euros in cash for their time.

The target population partly consisted of migrants with no legal documentation. This is by nature a "hard-to-reach population" because there is no registry data available to sample from. Furthermore, anecdotal evidence suggested that migrants who are legally obliged to leave Germany do not reside at the place where they are registered in order to avoid overnight deportation. To reach this sub-population, the survey utilized the Respondent-Driven Sampling (RDS) strategy developed by Heckathorn (1997). Participants who completed the interview were asked to recruit

up to three acquaintances who satisfy the eligibility criteria.[3] A successful recruiter was compensated 10 Euros for inviting one person, and a following 5 euros for inviting the second and third, respectively.

Prior to and during fieldwork the survey team were in contact with the civil society and religious figureheads in the Afghan communities in each city to raise awareness about and confidence in the study. The survey was anonymous due to the nature of the target population and the questions asked. A coupon system was implemented, which uniquely identified participants and their recruits. This system recorded recruitment chains. To avoid multiple participation by the same individual, a staff member was assigned to the interview centre on a permanent basis to conduct a screening process before the start of each interview. This staff member also monitored interviewing methods and data entry. Fieldwork was carried out in the second half of 2019 for three months in each city.[4] Computer assisted personal interviews were conducted by native speaking interviewers in Dari and Pashtu, the two main languages spoken in Afghanistan.

Table 2.6.: Estimated number of Afghan citizens who entered DE since 2014 (18+ years old) & SME sample size

	Berlin	Hamburg	Munich	Total
Pop.(est.)	6,485	7,337	3,006	16,828
Sample	534	226	264	1,024

Note: Target population estimates calculated from excerpt of the "Ausländerzentralregister" accessed on 31.07.2018

Table 2.6 shows the estimated size of the target population and the sample size in each city. The overall recruitment was successful in Berlin and Munich but less so in Hamburg; however, the sample represents a non-negligible part of the population of interest in each city.

Questionnaire and interviewer training: The survey included eight substantive sections: demographics, legal status history in Germany, expectations on the right to stay, personal network size, integration outcomes, health, vulnerability, and risk aversion. Show cards were used in various sections of the survey to help respondents answer.[5] 18 native speaking Dari and Pashtu interviewers were trained on survey methodology and interviewing techniques over a two-day period in each city. Moreover, a supervisor was likewise trained and was given the extra task of preventing curb-stoning. At all times during the fieldwork there were at least 2 interviewers, the supervisor and a research team member in the interview location. Locations were chosen to optimize the distance between the cities' centre and common refugee help sites in order to encourage participation.

[3] The number of invitees was determined given the network size of the respondent.

[4] In Munich from 28/05/2019 until 31/08/2019, in Berlin and Hamburg from19/09/2019 until 14/12/2019.

[5] The complete Questionnaire module is available under `https://www.dropbox.com/sh/fb8ytdovg0scboz/AADgwGi5AQ53lsRq68dEc8Sfa?dl=0`.

Invitation chain and recruitment: The majority of respondents were recruited using the RDS method (66 percent), while the remaining 24 percent were recruited through the registry sample. A third of those who were recruited with the registry system recruited individuals through RDS.[6] Respondents tended to invite individuals with similar legal statuses. Conducting a chi-squared test of independence between invitation pattern and legal statuses shows a significant relation between them.[7] Furthermore, respondents of all age groups tended to invite younger individuals, i.e. under 30; except in the case of those aged 41-50 who had a more spread out invitation age group. This suggests that the middle-aged group has a wider network in terms of age ranges in Germany.

In the following sections we highlight some key characteristics of the SME sample by city and compare the sample to the IAB-BAMF-SOEP (SOEP) sample and the DESTATIS macro data. The first is the closest survey study in Germany on the population of interest, while the second consists of registry level state data.

2.2.2. Pre-migration life courses

Table 2.7 shows key demographic characteristics by city of residence. The sample is dominated by males, which is consistent with German national statistics (66% male 34% female). However, women are slightly under-represented in Munich and over-represented in Hamburg and Berlin. The sample population is young (median age 28). The sample is equally split in regard to relationship status. Women are more likely to be married than men (63 vs 40 percent) and on average have 1 additional child as compared to men. There are slightly more married individuals in Hamburg as compared to Berlin or Munich. On average, respondents in Munich have 1.3 children compared to 1.6 children in Berlin and 2.1 children in Hamburg. These figures can be explained by the higher proportion of men in Munich. In comparison to the SOEP study, the SME study has slightly younger individuals at the mean and more single individuals. The SME study compares better in terms of age to the German national average, although it has more married respondents than the national average. The difference is closer in this regard, however, in comparison to SOEP.

The SME sample is less educated than native Germans, see Table 2.8. Close to two thirds of the respondents obtained lower secondary education or below. More individuals reached post-secondary and tertiary education in Hamburg compared to the other two cities (18 percent compared to 9 and 12 percent in Berlin and Hamburg, respectively).

Educational skill levels are reflected in the occupation levels reported. The majority were self-employed (often in menial to low skilled labour); while the second most common profession is manual low to semi-skilled labour activities. In Hamburg, we find more individuals in managerial positions, which is also in line with the age and education distribution of the city. From these simple statistics we can infer that there are slight demographic differences between cities across age, gender and pre-migration skill level.

[6] Invitation patterns – One acquaintance participated: 13 percent of the sample; Two acquaintances participated: 11 percent; Three acquaintances participated: 13 percent.

[7] The chi-squared and p-values of the invitees are as such: 1^{st}: 39.5 and 0.000; 2^{nd}: 15.6 and 0.003; 3^{rd}: 16.3 and 0.004.

Table 2.7.: Population demographics

	Berlin	Hamburg	Munich	Total	SOEP	DESTATIS
Female	0.40	0.49	0.24	0.38	0.40	0.34
	(0.49)	(0.50)	(0.43)	(0.49)		
Age	31.16	34.02	30.38	31.60	32.60	31.16
	(12.11)	(13.35)	(11.25)	(12.25)		
Sampled from register	0.22	0.31	0.22	0.24	–	–
	(0.41)	(0.47)	(0.41)	(0.43)		
Married	0.488	0.590	0.422	0.494	0.63	0.26
	(0.500)	(0.492)	(0.495)	(0.500)		
Single	0.442	0.335	0.551	0.447	0.31	0.62
	(0.497)	(0.473)	(0.498)	(0.497)		

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses. "Female" equals one if the respondent identifies as a female. The relationship status "other" is omitted as the rest of the sample. Age for DESTATIS is calculated for 18+ (actual average age of population is 25.) Married and Single categories of DESTATIS include entire Afghan population (including under 18).

Table 2.8.: Pre-migration life courses

	Berlin	Hamburg	Munich	Total
Educ @ CO				
No formal education	0.166	0.172	0.167	0.168
	(0.373)	(0.379)	(0.375)	(0.374)
Pre-primary & primary	0.345	0.238	0.299	0.301
	(0.452)	(0.393)	(0.409)	(0.430)
Lower secondary	0.183	0.163	0.207	0.184
	(0.387)	(0.371)	(0.406)	(0.388)
Upper secondary	0.211	0.229	0.236	0.221
	(0.409)	(0.422)	(0.426)	(0.416)
Post-secondary	0.036	0.088	0.057	0.053
	(0.186)	(0.285)	(0.233)	(0.244)
Tertiary	0.057	0.106	0.068	0.071
	(0.232)	(0.309)	(0.254)	(0.257)
Prev. employed	0.536	0.507	0.502	0.521
	(0.499)	(0.501)	(0.501)	(0.500)
Type of employment in CO				
Self-employed	0.157	0.237	0.156	0.174
	(0.364)	(0.426)	(0.363)	(0.379)
Manual	0.213	0.058	0.144	0.161
	(0.409)	(0.234)	(0.352)	(0.367)
Non-manual & civil	0.108	0.129	0.141	0.121
	(0.310)	(0.336)	(0.348)	(0.326)
Management (all)	0.058	0.080	0.061	0.064
	(0.235)	(0.272)	(0.239)	(0.244)

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses. "Prev. employed" refers to a previous employment held before migrating to Germany. "Self-employed" refers to all self-employment endeavours undertaken. "Manual" refers to blue-collar jobs, "non-manual /civil" refers to white collar jobs. "Management" refers to both blue and white collar positions.

2.2.3. Legal trajectories in Germany

The average length of stay in Germany is 4.14 years. The three most important stated emigration motives are war, political reasons, and persecution. Compared to the German national registry data, individuals in our sample have been in Germany for less time than the average, see Table 2.9. However, we do find the same difference between cities as in the national statistics. The caveat being that years in Germany reported, by DESTATIS, for Hamburg could be inflated given the presence of earlier refugee migration waves.[8]

Table 2.9.: Legal trajectories

	Berlin	Hamburg	Munich	Total
SME				
Years since arriving in DE/EU	4.042	4.314	4.196	4.136
	(1.654)	(1.252)	(2.012)	(1.683)
Secure Status	0.531	0.735	0.505	0.570
	(0.499)	(0.442)	(0.500)	(0.495)
Time in limbo	2.300	2.042	2.558	2.309
	(1.478)	(1.379)	(1.349)	(1.434)
DESTATIS - years in DE	4.7	8	5.6*	5.9

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses. * average for all of Bavaria, as city statistics are unavailable. Total for DESTATIS is the national average. Time in limbo refers to the time when the application process (initial and appeal) is running.

The majority of respondents have received some form of protection (inclusive of initial and repeal decisions).[9] This statistic varies considerably across cities. The number of secure statuses is less than the national average of 68% as of 2019.[10] The number of Duldungs is also lower than official statistics in 2019 on the federal state level: Berlin 5.3 (official statistics 6.8), Hamburg 7.4 (8.1), Munich 5.1 (6.8 in Bavaria).[11] These results are expected as our sample, contrary to population registry data, is focused on individuals who are less likely to have a final decision on their status as we wanted to target those who are still in legal limbo, e.g. are uncertain about the status of their legal proceedings. The time spent in legal limbo (time during application) also varies across cities with those in Hamburg taking slightly less time, followed by Berlin than Munich. These statistics indicate that there is variance within the legal process, and therefore trajectories between cities. Munich seems to take longer for a full application to finish and has less certainty in gaining a positive secure status; while Berlin's legal process certainty lies between Hamburg and Munich.

[8] A cultural enclave seems to have developed in Hamburg by previous Afghan refugee waves to Germany (see Fischer, 2019).

[9] Secure statuses include: Asylum/Refugee, Subsidiary protection and Ban on Deportation statuses. Awaiting a status decision and all other statuses are included in insecure statuses.

[10] See Appendix C.1 for a link to the source data.

[11] Berlin and Hamburg are city states.

Overall, the sample characteristics are similar with those of the IAB-BAMF-SOEP survey (Brücker, Rother, and Schupp, 2018). Therein, the sample reflects well key characteristics of the population of interest, with a slight oversampling of individual with a precarious status.

2.2.4. Integration outcomes

Having looked at the skill level that Afghan asylum seekers brought we now move to discuss human capital investments in Germany.

German language skills: As in the QPLC study we focus on three dimensions that are key for a successful integration in the long-run: language acquisition, education, and labour force participation. According to previous survey results, gender and current legal status influence human capital investments, with lower investment level from women and individuals with less secure status (see also, Brücker, Kosyakova, and Schuß, 2020) and the results in section 2.1. Therefore, we look at the achievements of these asylum seekers by gender, current legal status and add to the discussion city of residence differences. We add the latter as we assume that institutional differences between cities could also add to differences in integration.

The importance of early language acquisition for migrants has been stressed by economic literature (see Adserà and Pytliková, 2015; Chiswick and Miller, 2015, for a review) and is addressed in chapter 5. The SME survey included the two measures of language acquisition as in the QPLC:

(i) the highest German language class level attended as reported by the respondent, with course levels according to the Common European Framework of Reference for Languages (CEFR) standard,

(ii) an interviewer assessment at the end of a short conversation in German about the weather. Interviewers were trained to rate the respondent's language skill through grammar, sentence structure, word usage and fluency. Respondents with higher scores have better German language skills.[12]

We also add to our current analysis the respondents' self-rated assessment [None to Very well on 5-point Likert scale] in order to see the difference between self and external rating of language abilities.[13]

Table 2.10 shows the proportion of the population that attended no language class, some language class at the beginner level (up to A2), and at least an intermediate language class (B1) for entire sample, by gender, legal status and city of residence. It also shows the self-rated language skills and the average interviewer rated test scores.

[12]Interviewer graded respondents' skills according to the German scale, with 1 being excellent, and 5, cannot speak at all.

[13]In table 2.10 we reduce the scale to 3 for ease of reading.

Table 2.10.: Language level attended, ratings and test scores

	All	Gender		Status		City		
		Women	Men	Secure	Precarious	Berlin	Hamburg	Munich
No Class	0.195	0.220	0.181	0.166	0.235	0.15	0.16	0.29
	(0.397)	(0.415)	(0.384)	(0.372)	(0.424)	(0.36)	(0.37)	(0.45)
up to A2	0.407	0.457	0.378	0.412	0.400	0.401	0.493	0.346
	(0.491)	(0.498)	(0.485)	(0.492)	(0.490)	(0.491)	(0.501)	(0.477)
B1 and more	0.396	0.323	0.441	0.422	0.364	0.431	0.351	0.369
	(0.489)	(0.468)	(0.496)	(0.494)	(0.482)	(0.496)	(0.478)	(0.483)
Poor or None	0.281	0.369	0.227	0.270	0.294	0.322	0.284	0.194
	(0.449)	(0.483)	(0.419)	(0.444)	(0.456)	(0.467)	(0.452)	(0.491)
Okay	0.352	0.308	0.380	0.355	0.349	0.338	0.328	0.399
	(0.478)	(0.462)	(0.485)	(0.478)	(0.477)	(0.474)	(0.471)	(0.491)
Well or Very well	0.367	0.323	0.393	0.356	0.406	0.339	0.387	0.406
	(0.482)	(0.468)	(0.488)	(0.479)	(0.492)	(0.474)	(0.488)	(0.492)
Test score	3.365	3.510	3.286	3.285	3.475	3.126	3.543	3.664
	(1.385)	(1.429)	(1.354)	(1.373)	(1.396)	(1.333)	(1.382)	(1.408)
Observations	1008	381	626	574	434	520	225	263

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses. Rows 1-3 refer to the highest German course attended. German course level B1 is the lower intermediate level from the Common European Framework of Reference for Languages (CEFR) standard, A2 the upper beginner level. Rows 4-6 show the respondents self-reported ability. Row 7 displays the interviewer-rated test score.

German language abilities seem to be on average relatively low, despite a high uptake of German language courses. Around 80 percent of respondents have taken a German language course; yet, close to 30 percent state that they have no or very poor German language ability. The low abilities are also shown by the relatively low mean test score of 3.4 (where 1 is the highest and 5 is the lowest possible grade). Class attendance and language skills are lowest among women and individuals with a precarious status. These groups are also less represented in higher German language courses (B1 and more). The low attendance translates into lower test scores for women, with 0.224 points mean difference (0.093 sd, p-value=0.016) with men.[14] The mean difference between secure and the precarious statuses is less pronounced at 0.190 (0.090 sd, p-value =0.036).

At the city level, Munich residents have half the odds of not attending a German language course as those in Berlin or Hamburg. Berlin residents seem to reach higher levels of German courses as compared to Hamburg and Munich. This translates, on average, to lower test scores in Munich, and higher test scores in Berlin. Test scores are not significantly different between Munich and Hamburg despite the higher course uptake in the latter. Interestingly, respondents rate their skills higher in Munich as compared to their own test scores as well as compared to those in the two other cities. This suggests an incongruence between the self-rated measure and more "objective" measures.

Education in Germany: We find a high intention to take up education in the future, irrespective of gender and legal status, see Table 2.11. 61 percent of the respondents plan to continue their

[14] T-test of mean differences conducted here and in the following analyses.

education in Germany. Note that compared to the average asylum seeker in the SOEP Survey, afghan asylum seekers in our sample have higher education aspiration (61 percent compared to 44 percent). The most sought-after form of education is vocational education (36 percent of the entire sample). Current enrolment is at 22 percent, and a third of the sample completed some type of education since arrival.

Table 2.11.: Education in Germany

	All	Gender		Status		City		
		Women	Men	Secure	Precarious	Berlin	Hamburg	Munich
Plans Education	0.610	0.589	0.622	0.586	0.642	0.719	0.513	0.475
	(0.487)	(0.492)	(0.485)	(0.492)	(0.479)	(0.449)	(0.501)	(0.500)
Plans voc. training	0.364	0.366	0.361	0.339	0.396	0.479	0.217	0.257
	(0.481)	(0.482)	(0.481)	(0.474)	(0.489)	(0.500)	(0.412)	(0.438)
Currently enroled	0.219	0.184	0.239	0.228	0.208	0.223	0.217	0.213
	(0.413)	(0.389)	(0.426)	(0.419)	(0.406)	(0.417)	(0.413)	(0.410)
Curr. voc. training	0.098	0.070	0.115	0.089	0.109	0.108	0.066	0.106
	(0.297)	(0.256)	(0.319)	(0.285)	(0.313)	(0.310)	(0.249)	(0.309)
Completed educ.	0.297	0.257	0.321	0.306	0.286	0.302	0.273	0.309
	(0.457)	(0.437)	(0.467)	(0.461)	(0.452)	(0.459)	(0.446)	(0.463)
Compl. voc. training	0.061	0.049	0.066	0.052	0.073	0.068	0.053	0.053
	(0.239)	(0.217)	(0.249)	(0.221)	(0.260)	(0.252)	(0.224)	(0.225)
Observations	1018	385	631	581	436	530	226	261

Note: Mean values calculated on non-missing observations.

As before, there is a large discrepancy between genders. While plans for undertaking education are similar between genders, a significantly lower number of women are currently enroled (18 vs 24 percent) compared to men. Likewise, less women completed education compared to men. Differences in enrolment and completion are not significant between statuses and cities. Hence, we see similar gender structural differences as with the Syrian study.

Work in Germany: The occupational level in Germany is low and unequal between men and women (30.7 vs 10.1 percent, respectively), see Table 2.12. Of those employed, 60 percent are employed in a part-time job, or are completing internships or training. Women are twice more likely to intend to learn German or take up education than men. This result highlights the discrepancies found in host country life courses. Those with a precarious legal status seem to take up work significantly more than those with secure statuses (mean difference of 0.068 with sd = 0.027, p-value=0.011) and intend to take up work at a higher rate. They are also significantly less likely to intend to take up education or language courses first than those with secure statuses (mean diff.: 0.180, sd=0.031, p-value=0.000). Respondents in Munich are more likely to be in employment and have less intention to learn German or take up education than those in Berlin or Hamburg. Note, while employment uptake is highest in Munich it also has the lowest attendance in German language classes.

These results indicate different paths to integration, which depend on the legal status and city. With a secure status, asylum seekers choose to integrate first though language acquisition and education. When the status is insecure, individuals are more likely to enter the labour market, either to reap the benefits of living in Germany given the risk of deportation, or to increase their

Table 2.12.: Work in Germany

	All	Gender		Status		City		
		Women	Men	Secure	Precarious	Berlin	Hamburg	Munich
Curr. occupied	0.230	0.101	0.307	0.201	0.268	0.177	0.189	0.373
	(0.421)	(0.302)	(0.461)	(0.401)	(0.444)	(0.382)	(0.392)	(0.484)
Plan job search	0.258	0.145	0.328	0.198	0.339	0.258	0.229	0.285
	(0.438)	(0.353)	(0.469)	(0.398)	(0.474)	(0.438)	(0.421)	(0.452)
Plan lang./educ. first	0.449	0.629	0.341	0.527	0.346	0.511	0.471	0.304
	(0.497)	(0.484)	(0.474)	(0.499)	(0.476)	(0.500)	(0.500)	(0.461)
Observations	1020	385	634	581	439	227	532	263

Note: Mean values calculated on non-missing observations.

chance to obtain a secure status. Moreover, those in Munich seem to be foregoing long-term investments for current occupation.

Multivariate analysis: To confirm the insights gained from the descriptive statistics, we conduct regression analyses for the following dependent variables: the conversation test score, an indicator of enrolment or completion of some education in Germany, and an indicator for being currently in employment. We also include an indicator variable for the decision to obtain education before entering the labour market in order to shed light on the interplay between education and job search.[15]

The set of independent variables includes:

(i) demographic variables: gender, age group, years of education, city of residence, and time since arrival in Germany / EU,

(ii) variables related to the legal status: having a secure status, and the time spent in legal process,

(iii) subjective beliefs about the chance of staying in Germany for the next three years, and the chance of being deported if not receiving the right to stay (RtS). These variables measure individual prospects of staying. We expect those with higher stay prospect to invest more in human capital.[16]

Table 2.13 summarizes the results of this analysis. The first two columns (1) and (2) use linear regression model, whereas the subsequent columns (3)-(8) use logit regressions models because of the categorical dependent variables.

[15]For those already in employment, this variable equals one if they have completed or are enroled in education. For those not in education, this variable equals one if they report that they wish to obtain some education before entering the labour market.

[16]Dustmann and Görlach, 2016 points out the importance of migration time horizon in human capital investments decisions. Economic returns on migration are larger when the stay is longer.

Table 2.13.: Investments analysis

	Test score		Education		Work		Educ. first	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.233**	-0.369***	-0.236	-0.394*	-1.235***	-1.274***	1.228***	1.115***
	(0.09)	(0.09)	(0.19)	(0.20)	(0.23)	(0.24)	(0.16)	(0.17)
Age Groups	-0.599***	-0.616***	-1.612***	-1.606***	-0.522***	-0.512***	-0.132	-0.170**
	(0.04)	(0.04)	(0.14)	(0.14)	(0.10)	(0.10)	(0.08)	(0.08)
Yrs in educ in CO	0.053***	0.055***	0.057***	0.060***	0.029	0.028	-0.006	-0.001
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Munich	-0.434***	-0.394***	-0.069	-0.059	0.954***	0.942***	-0.676***	-0.593***
	(0.11)	(0.11)	(0.21)	(0.22)	(0.21)	(0.22)	(0.19)	(0.19)
Hamburg	-0.330***	-0.386***	0.177	0.102	0.222	0.203	-0.293	-0.346*
	(0.10)	(0.10)	(0.23)	(0.24)	(0.26)	(0.27)	(0.19)	(0.20)
Yrs since arriving in DE/EU	0.086***	0.087***	-0.025	-0.023	0.081**	0.087**	-0.026	-0.032
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Prec. Status		-0.613***		-0.555*		-0.268		-0.285
		(0.14)		(0.32)		(0.32)		(0.25)
Time in limbo		-0.553**		-0.380		-0.593		0.485
		(0.24)		(0.53)		(0.57)		(0.43)
Stay in DE		0.264		0.172		0.186		0.444
		(0.22)		(0.39)		(0.39)		(0.34)
Be deported		-0.040		0.090		0.260		-0.552**
		(0.15)		(0.31)		(0.34)		(0.26)
Observations	744	744	793	793	793	793	792	792

The first two columns (1) and (2) use linear regression model, whereas the subsequent columns (3)-(8) use logit regressions models because of the categorical dependent variables. Reference categories are: Male, Berlin and Secure Status. Coefficients shown, robust standard errors in parentheses. $^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$.

Most of the findings above are confirmed. Women have less language proficiency and are less likely to be employed. They are also slightly less likely to be currently in education after conditioning on all variables. However, they are much more likely to choose to take up education first before seeking a job. Respondents in Munich are less likely to take up education in the future and are more likely to be employed. In Hamburg, respondents perform worse on the language test and are less likely to first take up education, yet at a lower rate than in Munich. Respondents with precarious status are more likely to perform worse on the language test and take up education at a lower level; however, there is no significant difference in work uptake after conditioning on other variables. Furthermore, other variables have expected relations: age decreases integration investment, higher education in country of origin translates to better language scores and higher completion of education in Germany, while time in Germany increases test scores and the probability of being employed. Finally, the expected probability of stay does not seem to significantly change these integration measures; however, the probability of deportation dampens the intention to invest in education before job search.

2.2.5. Conclusions

To sum up, the SME study was conducted in order to examine a population with less secure statuses in Germany which could shed light on the discrepancies that could occur in integration given legal ambiguity.

In terms of life courses we find that incoming Afghans before their arrival have acquired relatively low skills in terms of educational attainment and that half have worked in low skilled and semi-skilled jobs. The majority are men and the majority of those sampled are married; yet there is a large difference in family composition between men and women.

The majority receive secure statuses; however, there are differences across cities in regard to legal trajectories. Namely, respondents in Munich seem to wait longer to be out of the legal process and are less likely to receive a secure legal status, after initial and follow up applications. We find that, in turn, this legal ambiguity translates to lower long-term integration investments, e.g. language acquisition and educational uptake, in lieu of taking up work. However, we find a relatively low level of occupation take up throughout the sample. We also find significant differences across cities, irrespective of legal status as well as a propagation of decreased integration outcomes for women.

These results suggest that further research should be undertaken to further highlight the detriments these differences can cause and suggest relevant policy solutions.

3. Literature

This chapter outlines the literature used throughout the dissertation. This review details the concepts with which methodologies are built with as well as highlights the position of each study in the relevant discourse.

In this work, a commonly used concept of integration is applied which distinguishes between structural, social, cultural and emotional integration (Esser, 2001, 2008; Kalter et al., 2008). Structural integration refers to migrants' effort to take part in the labour and educational markets of the host country. Social integration refers to the individual's interaction with the host society's citizens, such as having native acquaintances, friends and family members. The third dimension, cultural integration, measures if migrants are able to speak the host society's language and if the host society's norms are being incorporated. Finally, the last dimension, emotional, is often considered the "final" stage of integration, where an individual feels a sense of belonging in the host society and ethnic differentiation is blurred. The focus of most of the results presented in this dissertation is on structural and (cognitive) cultural integration, i.e. language abilities. These two dimensions are often highlighted as highly important for overall economic integration in the host country.

For ease of reading, I break up the literature review by subsequent result section. Each subsection highlights the aspects of migrant integration used in each study. Please note that there are synergies and overlaps across some studies. For clarity, I leave the discussed papers as is in several sections in order to ensure that each separate study's discussion is complete.

3.1. The role of trauma for integration

This study examines the role that the presence of traumatic events has on structural and cognitive-cultural integration of asylum seekers. To that end, we first highlight how traumatic events affect mental health. We then explain how this has, in turn, been found to influence integration in asylum seekers.

Traumatic experiences and prevalence of mental health problems

In principle, most migrants experience major adjustment stressors before, during and after migration (Foster, 2001). Previous research has documented a wide variety of mental health issues associated with these stressors, such as: "anxiety, depression, post-traumatic stress disorder

(PTSD), substance abuse, and higher prevalence of serious psychiatric disorders" (Foster, 2001, p. 154). Foster (2001, p. 155) distinguishes four stages of "immigrant trauma": (1) pre-migration trauma, e.g., related to the events that triggered migration; (2) traumatic events during transit to the new country, e.g., assaults during illegal trafficking or witnessing the drowning of loved ones; (3) continuing traumatic experiences during the process of resettlement, e.g., being temporarily housed in crowded camps or long phases of insecurity regarding a temporary or permanent residence permit; and (4) post-migration stress due to substandard living conditions in the target country or due to unemployment, etc.

Refugees by definition have on average higher levels of pre-migration trauma compared to labour or family migrants. They often also have less time to plan and prepare for migration (Chiswick and Miller, 2001, p. 394); therefore, they are at higher risk of experiencing potentially traumatic events during transit. Similarly, we can also expect more stressors for refugees in the last two stages of migration, i.e., after arriving in the target country. This is especially so with regard to the massive movement of refugees to European countries between 2014-2016 (BAMF, 2019c). In the case of Germany, the process of being granted asylum or refugee status was often long drawn and living conditions in hastily assembled housing facilities, in many cases, were suboptimal.

Stress process theory assumes that stressful or traumatic events or experiences challenge one's coping mechanisms and that the capacity to adapt to continued hardships is finite (e.g. Beiser, Turner, and Ganesan, 1989). Depending on individual differences in personal coping resources and social environment, the accumulation of stressors can overwhelm the individual and result in increased vulnerability. The dose-response concept derives a similar prediction ((e.g Böttche, Stammel, and Knaevelsrud, 2016, p. 1136); (Foster, 2001, p. 157); (Miller and Rasmussen, 2010, p. 10)). Furthermore, cumulative trauma experiences have been found to correspond to the severity of depression and PTSD symptoms. The association of accumulated trauma experience with psychological distress and psychiatric disorders has also been documented in general population samples (Turner and Lloyd, 1995). However, several factors have been identified as helpful coping instruments such as relocating as a family (Foster, 2001, p. 154) or knowing someone in the target country (Böttche, Stammel, and Knaevelsrud, 2016).

Further psychiatry literature identifies migration as a grief process (e.g. Carta et al., 2005). They suggest that refugees are more prone to mental health problems. In this concept, migration is viewed as a process of loss and change. The theory stipulates that labour and family migrants may mourn their separation from their homeland, family and friends. This separation is temporary; however, as labour migrants can, in theory, always return home or visit their home country. In contrast, refugees face an unforeseeable period to grieve over the loss of their home environment, as they typically cannot return. Carta et al. (2005, p. 4) suggest that grief is additionally heightened when migration was undertaken under adverse conditions. They also point to the importance of reception conditions in the new country. This corresponds to the argument above that refugees potentially experience further post-migration stress.

To our knowledge, in all studies where depression, anxiety symptoms and post-traumatic stress disorder (PTSD) scores were measured (e.g. Cardozo et al., 2004; Crepet et al., 2017) refugees show higher prevalence rates for mental health problems at arrival compared to other migrants or compared to the general population (Rasmussen et al., 2012). This is regardless of the target country or measurements used and is in line with the theoretical arguments outlined above.

Moreover, meta-analytic studies show higher prevalence rates for mental health problems in refugees, with significant between-study heterogeneity related to differences in pre-migration conditions depending on the country of origin as well as post-migration conditions related to the resettlement country (e.g. Bogic, Njoku, and Priebe, 2015; Lindert et al., 2009; Steel et al., 2009). A similarly high prevalence of mental health problems is documented, also with considerable variation across contexts, in a study covering 90 refugee camps in 15 low- and middle-income countries (Kane et al., 2014).

Indeed, some studies establish a direct link between experiencing trauma and their effects on mental health. Unlike the above-mentioned work, these studies include data on exposure to traumatic events or experiences. With few exceptions, [the number of] traumatic experiences are highly correlated with mental health problems (Cardozo et al., 2004; Cheung et al., 2018). One exception is social functioning, which was not correlated with exposure to traumatic experiences (Cardozo et al., 2004, Table 4). Some studies find differences in prevalence rates when studying the same population in different target countries such as Syrians in Turkey vs. Sweden (see, Cheung et al., 2018). These differences point to the potential relevance of the setting in the target country. However, these differences could also result from selective migration patterns.

To our knowledge, there is only one study available on the refugee populations in Germany that considers trauma. Dietrich et al. (2019) use data on a small sample of first-time entrants into the German unemployment register from Syria or Iraq (N=163). They report 59.4 percent having at least one traumatic experience, where 8 percent screened positive for PTSD. The number of violent experiences proved to be a strong predictor of the severity of the PTSD symptoms of avoidance or hyper-arousal. This relationship is almost unchanged, even when controls for resources, residence status and social origin were added.

From these studies it follows that refugees, who on average more often experience traumatic events, have a higher susceptibility for mental health problems compared to labour or family migrants. Relevant moderators are personal and social coping resources, such as being resilient or being close to family. However, in general, these empirical studies do not directly determine whether traumatic experiences before and during migration lead to the documented mental health problems and decrease in integration outcomes seen in the literature or whether this is due to higher levels of post-migration stress or if it is combination of all factors.

Refugees, mental health and integration

We understand integration as "the processes that increase the opportunities of immigrants and their descendants to obtain the valued 'stuff' of a society, as well as social acceptance, through participation in major institutions such as the educational and political system and the labour and housing markets" (Alba and Foner, 2015, p. 5). In chapter 4 we focus on the structural dimension of integration, i.e., access to and placement in the educational system and the labour market. Furthermore, we consider language acquisition, i.e., cognitive-cultural integration, as an essential investment into realizing structural integration. Upon deciding to invest in activities that allow for the further accumulation of receiving country-specific human capital, learning the language of the new country, if not already known, becomes an essential first step. The process of integration

can be conceptualized as investment decision in line with human capital theory (e.g. Chiswick and Miller, 2001; Esser, 2006; Kalter and Granato, 2002). Hence, migrants can invest their time and resources into receiving country-specific capitals and therein integrate, e.g., getting a "good" job. Alternatively, a migrant could decide to invest into the ethnic or origin country spheres, e.g., into ethnic economies, or to not invest and stick with the status quo. For the purposes of our research, we simplify the decision to invest into a binary choice to invest into the receiving countries language and structural spheres, or not to invest.

The investment decision generally depends on three theoretical constructs: opportunity, motivation and costs. Opportunities, i.e., restrictions and the (perceived) likelihood that an investment succeeds, are a necessary condition to invest. The combination of motivation, i.e., the (perceived) utility of an investment compared to sticking with the status quo, and (perceived) costs, e.g., monetary, time or opportunity costs, determine individual decisions (for details see Esser, 2006, 41f). The following details the connections between specific conditions to integrate with these theoretical constructs. We focus our attention on traumatic experiences and current (mental) health and discuss some further particularities with respect to refugees. Note that specific conditions can be connected to more than one theoretical construct.

While the general conditions that affect integration are well documented in the literature (e.g. Berry, 1997; Esser, 2006), far less is known regarding the relevance of mental health resulting from traumatic experiences. Potentially traumatic experiences and their presumed mental health problems, conditional on a person's coping resources, may influence opportunity, motivation and costs to integrate. Having experienced traumatic events, as suggested by the stress process theory and dose-response concept, could lead to the finite agency that an individual possesses to deal with new stressful events, such as integrating into a new society, to diminish. Traumatic experiences, therefore, could lower the opportunities for integration. This is especially so for cognitively demanding long-term investments, i.e., those into educational degrees. This in turn could increase the cost of integrating. On the other hand, having had several traumatic experiences in the home country and on route to the receiving country might reinforce the motivation to stay long-term and to invest more, given the conditions of residence permits in Germany. If refugees want to achieve a residence status which is not conditioned on the reasons to flee the origin country, they need to show economic independence, e.g., have a secure job, as well as show a certain degree of German language competence, at least B1 (intermediate) German language abilities. Moreover, the mitigating effects of coping mechanisms may decrease the overall cost of integration, e.g., through family support for integration endeavours and perseverance against the hardships associated with the experience.

When considering current health and mental state similar arguments can be made as to those above. We expect that feeling anxious, depressed or stressed may decrease opportunities and increase costs in a similar manner to experiencing traumatic events. Having a better subjective health perception would lead to decreases in the costs and increase in perceived opportunities. However, note that it remains unclear whether pre-migration traumatic experiences or post-migration adaption stress has caused the differences in health and prevalence of depressive symptoms. Table 3.1 summarizes the expected relationships of traumatic events and current (mental) health to the theoretical constructs of the investment model of integration.

Table 3.1.: Individual conditions and expected relationships to the investment model of integration

	Opportunities			Motivation			Costs		
	Lang.	Empl.	Educ.	Lang.	Empl.	Educ.	Lang.	Empl.	Educ.
Traumatic experiences & coping resources									
Traumatic experiences	-	-	–	+	+	+	+	+	+
Traumatic experiences * Family available	+	+	+				-	-	-
Traumatic experiences * resilience high	+	+	+				-	-	-
Current (mental) health									
Health	+	+	+				-	-	-
Feeling anxious/ depressed/ stressed	-	-	-				+	+	+
Other conditions									
Full refugee/asylum status (vs. subsidiary or other)	+	+	+						
Intent to stay: long-term				+	+	+			
Family available: having partner or children, who are in DE	-			-	+	-			
Age at arrival in DE	-	-	-						
Education in CO.									
medium	+	+	+	+	+	+		-	-
high	++	++	++	+	+			–	–
Co-ethnic network in DE	-	+	+					-	-
Duration of stay in DE	+	+	+						
German language ability		+	+					-	-

Notes: "Lang." stands for "German language ability", "Empl." stands for "Employed (currently)", "Educ." stands for "Education (currently enroled)", "CO" stands for "country of origin", and "DE" for "Germany". * denotes interaction effects, -/+ the direction of the presumed relationship to the theoretical constructs, empty cells indicate that we do not expect an effect.

There is extensive research on PTSD, commonly defined as a mental disorder causing distress, which is triggered by traumatic experiences with life threatening characteristics, and is usually associated with additional problems, e.g., depression, alcohol/drug dependency, or personality disorders (Nygaard, Sonne, and Carlsson, 2017, p. 1). PTSD is often described as leading to both physical and non-physical changes to the person (WHO – World Health Organization, 2016). For these reasons it is often assumed that individuals dealing with mental health problems, like depression or PTSD, have a harder time to focus on integration activities, like language learning or entering the labour market etc., (see also Dietrich et al., 2019).

To our knowledge empirical studies mostly provide support for an association between mental health and integration – however, none of them can convincingly distinguish whether the documented association point to a causal effect of mental health on integration or vice versa. Using data on a sample of refugees in the UK, Cebulla et al. (2010) find that those who described themselves as having poor health were less likely employed and showed slower improvement of English language skills over time. Khoo (2010) reports similar results for self-reported health

and mental health scores for refugees in Australia, although the effects are only significant for males. A study with a small and selected sample of refugees seeking treatment in Switzerland documented an association between poor social integration and psychological symptoms (Schick et al., 2016). Haasen, Demiralay, and Reimer (2008) use small and highly selective samples of Russian and Iranian migrants in Germany to document a correlation between acculturation stress and mental distress, which are similar for both groups. Moreover, these studies mostly examine long-term integration outcomes.

We found two studies with very similar data compared to our study: in one, the sample was very small, and arguably the context, Vietnamese refugees who were resettled in the capital region of Norway in the 1980s, may have differed on several dimensions from our own (Hauff and Vaglum, 1993). The authors find that experiences of war trauma are independently related to labour market outcomes, i.e., when age, sex and mental health (measured after arrival) were controlled for. Due to the small sample, the number of controls was restricted. Notably, the effect on labour market participation three years after resettlement was positive. The authors argue that this finding is in line with those having experienced severe trauma being motivated to give priority to immediate economic security, i.e., joining the labour force, instead of investing into more long-term occupation potential, e.g., into further educational acquisition. In line with this argument, a study on refugees enroled in language courses in Norway found negative effects of violent trauma on the motivation for language training (Iversen, Sveaass, and Morken, 2014).

We also include general conditions when examining the integration process. We can roughly split these conditions into those that effect migrants overall and those that influence refugees in particular. The lower panel in Table 3.1 shows the expectations regarding other conditions that have been found to influence the integration of migrants (e.g. Berry, 1997; Esser, 2006). For most conditions, i.e., age at arrival, education, having co-ethnic networks, duration of stay, intent to stay and German language ability, there is little reason to expect differences between refugees and other migrants. However, with regard to their opportunities, refugees often face additional restrictions tied to their residence status. Therefore, we expect that the opportunities for more costly long-term investments, e.g., investing in a receiving country-specific education, are lower when the authorities' decision on the residence status is not yet taken or if they receive a one-year subsidiary protection status rather than a full refugee/asylum status with an initial three-year protection period. Their (initial) temporary residence status may also influence refugees' motivation to invest in language and education. The expected horizon for the benefits of more investments to pay off does not solely depend on their intent to stay, but also on the continuance of their residence status by the authorities. The intent to stay question may therefore not capture their subjectively expected duration of stay. Moreover, we also look at family availability as a condition of integration. On the one hand, the (often) involuntary nature of separation may increase the motivation to integrate so that one may gain a less precarious legal claim for family reunification. On the other hand, the presence of partners and children has been documented as a factor that decreases the motivation to, for instance, learn the receiving country's language and increases the motivation to directly enter the labour force.

The above discussion is used to model and operationalize our dependent and independent variables, see chapter 4.

3.2. Language proficiency and economic incentives

Chapter 5 is concerned with relating subjective expectations regarding economic outcomes to the process of language learning. The economic literature usually classifies the determinants of language proficiency of migrants into three categories: Exposure, Efficiency and Economic Incentives (the 3 Es). *Economic Incentives* refers to the benefits migrants expect to receive after investing (to varying degrees) into the host country language. [1] This category includes variables such as the expected duration of stay and the return to language acquisition. Research relates the three Es with language proficiency as can be seen by the surveys by Adserà and Pytliková (2015) and Chiswick and Miller (2015).

Chiswick and Miller (2015), however, best sum up a remaining limitation in the literature:

> "the most problematic aspect of the research on the determinants of destination language skills is estimating the impact on proficiency of the expected increase in earnings from becoming more proficient - that is, using the individual's expected increase in earnings as an explanatory variable. Data are not available for this on an individual basis."

This study brings together the above stream of literature with more recent literature on the elicitation of subjective expectations in order to measure economic incentives on language acquisition. Typically, respondents are directly asked about expected earnings and the expected probability of realization of given outcomes in different counterfactual scenarios (see, Manski, 2004). This approach has now been applied to many economic questions, including the choice of contraceptive methods (Delavande, 2008), the choice of college major (Beffy, Fougere, and Maurel, 2012; Wiswall and Zafar, 2015), and the willingness to migrate illegally (Bah and Batista, 2018).

We use this approach to help fill the gap articulated by Chiswick and Miller (2015).

3.3. From asylum seekers to illegal migrants

Chapter 6 relates to the rapidly growing literature about individual subjective expectations (see, e.g., Manski, 2004), that has investigated several investment decisions and behaviours, including birth control choice (Delavande, 2008), risky sexual behaviour (Delavande and Kohler, 2016), education choice (Attanasio and Kaufmann, 2014; Jensen, 2010), choice of college major (Wiswall and Zafar, 2015), and career decisions (Van der Klaauw, 2012). Within the literature on migration, the subjective expectation framework has been used to understand migrants' expectations about outcomes at destination (e.g. Hoxhaj, 2015; McKenzie, Gibson, and Stillman, 2013). We contribute to this literature by studying the subjective beliefs of asylum seekers in relation to the decision to overstay.

[1] *Exposure* to the host language refers to the interaction an immigrant has with the host country language before and/or after migration. *Efficiency* refers to the ability to convert said "exposure" to actual language ability. The second category is usually measured by the education level of the person, age at migration, native language similarity to host language and motive to migrate.

This study also contributes to research on the determinants of irregular migration. Part of this literature is interested in the effect of migration policies on the flow of undocumented persons (e.g. Amuedo-Dorantes, Puttitanun, and Martinez-Donate, 2013; Gathmann, 2008; Orrenius and Zavodny, 2003). Another stream of this research looks at the effect of individual expectations on irregular migration decisions (e.g. Bah and Batista, 2018; Mbaye, 2014). Our work is closely related to the latter, in particular to Bah and Batista (2018) who provide experimental evidence about the importance of the perceived risk of dying *en route* and the perceived chance to be regularized for the intention to migrate irregularly. Whereas most of these contributions look at economic migrants, our focus is on a population of asylum seekers who have already arrived in the host country yet face a significant risk of illegal stay.[2] To the best of our knowledge, this is the first work to look at the overstay decision of asylum seekers using a subjective expectation framework.

This research is also naturally linked to the literature on undocumented migration. This literature often looks at the effect of legal status on immigrants' outcomes, often by examining regularization changes (see a review in Fasani, 2015). Related to the present research, some papers look at the effect of legal status *prospects* on outcomes and investment.[3] We contribute to this literature by studying the decision to become illegal in the first place in a population *at risk*, but not necessarily undocumented. We can link directly elicited migrants' subjective beliefs to the decision to stay without the legal right to do so. In as much, we show the importance of individual prospects.

For a large-scale quantitative survey, focusing on a population at risk of undocumented stay is easier than focusing on a population of completely undocumented migrants. Indeed, undocumented migrants qualify as a "hard-to-reach" population (see, Tyldum and Johnston, 2014). A similar approach has become common in surveys on (internal and international) migration that elicit intention to migrate from populations in source countries, e.g., Gallup World Poll (Gallup, 2018). Unlike most studies that include only categorical answer options, our research records these intentions as probabilistic measures. Moreover, we study possibilities of this decision under different hypothetical scenarios.[4]

Our work is also related to the role of information in determining migration decisions. Shrestha (2017) provides information about mortality rates during the migration journey to potential migrant workers in Nepal. Dunsch, Tjaden, and Quiviger (2019) and Bah et al. (2019) show a video documentary to potential irregular migrants in West Africa. In our case, we provide information about the actual proportion of deportation in the population, but do not find this information to be very effective in changing expectations. Indeed, it has only a limited effect on subsequent migration intentions.

Finally, this study relates to the literature on (illegal) migrants' human capital investment, such as education or language acquisition. Mukhopadhyay (2019) finds a link between the probability of deportation and the education decision of illegal migrants. Chapter 5 shows that Syrian refugees

[2] Asylum seekers with a rejected application form a large proportion of migrants with a legal obligation to leave in Germany (about 152 thousand from an estimated total of 250 thousand in 2019).

[3] For example, Devillanova, Fasani, and Frattini (2017) studies the effect of the prospect of the legal status on employment, using exogenous eligibility conditions of an amnesty program.

[4] A more concise discussion of the survey and the descriptive parts of the expectations module of the "Survey on Migrants' Expectations in Germany" can also be found in Méango (2020).

in Germany who expect higher economic returns from German language acquisition are more likely to invest in it. Coniglio, De Arcangelis, and Serlenga (2009) find that the willingness to return among economic immigrants in Italy is higher among skilled-migrants, because of the lower expected return of illegal migration.

3.4. Over-optimism and job market access

Chapter 7 examines the role that belief updating has on asylum seekers' integration outcomes. This research contributes to two strands of literature: belief updating and migrant integration. It provides an example of how the updating of beliefs by individuals on market access, in the context of forced migration, influences labour market outcomes. Below, I outline pertinent contemporary research.[5]

Migrant optimism and labour market access and outcomes

An initial question that arises is why would beliefs on access to the labour market matter in the context of refugees? Several researchers have outlined that the decision to migrate is principally a combination of push and pull factors, where certain aspects are weighed differently by the migrant (Bodvarsson and Van den Berg, 2013; Sjaastad, 1962). For example, in the case of forced migration, e.g. refugees and asylum seekers, while push factors such as war and persecution may play a larger role in the decision to migrate, they do not negate the substantial role that pull factors such as quality of jobs and wages play. Indeed, the decision as to *where* to migrate to, after the initial decision to leave, is greatly affected by beliefs on the level of access individuals would have in perspective host countries. Research, outlining the relevant push and pull factors present for asylum seekers coming to Europe, identifies that beliefs of differing levels of access to "better education and employment opportunities" are a strong motivation for migrating to certain European countries compared to the push factor of war (Boswell, 2002; Laczko et al., 2016, p. 22).

There have been a few studies that closely relate to my research questions. The closest is a study conducted by McKenzie, Gibson, and Stillman (2013). In this study the authors test the concept that emigrants have over-optimistic expectations about their respective incomes abroad, as outlined in Sayad (2004), Braga (2007) and Massey (2006). The main mechanism for over-optimistic beliefs is stated to be the presence of either false, or less, information, on the probability of employment and the expected wages, received by potential migrants from their network in perspective countries. The authors use a survey that follows (potential) Tongalese migrants to New Zealand, and measures their expectations on labour market entry and wages. Post-migration data is collected on actual entry into the labour market and respective incomes received. They find that paradoxically, Tongalese men underestimate their odds of being employed as well as the income they would earn if they migrated. However, Tongalese women had fairly accurate

[5] This study is single authored.

estimations of the odds to work and their potential earnings. Moreover, they found that pre-migration labour market expectations significantly matter in the ultimate decision to migrate and that not only does the presence of a network but also its size and age composition matter for the decision. Another closely linked study was conducted in Nepal by Shrestha (2017). In this study the author tests if Nepalese migrants have inflated expectations on earnings and mortality rates for migration to Malaysia and the Gulf states. The researcher provided an information campaign, in a randomized field experiment, on actual wages and mortality risks and then tracked individuals' migration decision three months after. He finds that there is slight over estimation of earnings, in the case of migrants with no previous foreign migration experience, as well as overestimated chance of death while abroad. However, those with networks in the destination country did not have overly inflated beliefs.

Other studies on migrant's (over-optimistic) expectations regarding their labour market access and outcomes concentrate on second generation migrant children's education and their frequently overestimated abilities in educational tracks. The main mechanisms driving these effects are found to be misinformation on the student's ability relative to cohorts propagated by parents or peers. This initial miscalculation leads to subsequent pressures to access higher education tracks that may not be attainable. A study by Nygård (2017) finds that, holding constant educational tracking systems and capabilities of students in the Netherlands and Sweden, significant others' expectations play a large role in the expectations of students with a migration background in terms of applying to academic educational tracks.

Misspecified beliefs are not only a consequence of misinformation on the level of access to the market but also on structural differences in the market itself. Therefore, as I am interested in measuring the difference arising from misinformation, it is paramount to hold constant these structural differences. There has been a vast amount of research that outlines the differences between migrant groups and natives in terms of labour market access and wages (Barth, Bratsberg, and Raaum, 2012; Bevelander and Lundh, 2017; Bonoli and Liechti, 2018; Brücker and Jahn, 2011; Dorner et al., 2016; Esser, 2004; Grogger and Hanson, 2011; Hartog and Zorlu, 2009; Hering and Poncet, 2010; Konle-Seidl, 2017; Kunz, 2003; Lund, 2002). Relevant to this study are a few that outline key aspects that should be included as controls in the analysis, especially in regard to refugees.

Differences to labour market access for migrants varies according to skill. Generally, unskilled migrant workers are not found to be perfect substitutes to natives, and therefore have "easier" access to the labour market in that they usually fill more menial tasks, compared to skilled migrant workers (Banerjee and Duflo, 2019). This is important in my context as most asylum seeker in the last wave to Europe were relatively less skilled compared to their native counterparts. Bevelander and Lundh (2017) conduct a study in Sweden and find that although the local supply of jobs greatly matters for refugees' odds of employment, the type of job and migrant skill mattered more. That is, in terms of diversification of opportunities, areas with low skill and education opportunities were positively related to refugees' employment chances. These results are bolstered by findings in a study conducted by Hartog and Zorlu (2009) in the Netherlands which also looks at differences of labour market outcomes between natives, refugees and other immigrants. They find that higher education at country of origin for refugees does not mean significantly higher wage premium

and offers (access to the Dutch labour market). This effect, however, is not present in the case of low-skilled workers.[6]

Finally, and wrapping up this discussion back to the role of network information in access to the labour market, a paper by Munshi (2003) on Mexican migrants to agricultural rich areas in the United States, finds that networks are instrumental in initial access to work offers, through referral systems, i.e. that local information matters. The role of networks in job market access has also been noted in skilled migrant labour force (Dorner et al., 2016; Dunsch, Tjaden, and Quiviger, 2019).

These studies outline the importance of including location and networks in the host country, on top of the usual controls for labour market access: skill level, age, gender, family structures, health and legal status. Location in the host country serves as a measure of local labour market structures, while the presence of a network mediates the access level. Their inclusion is therefore paramount in the analysis.

Expectation setting and belief updating

The second literature branch relates to belief setting and updating. Mainly, do changes to beliefs, as encompassed by differences from a priori beliefs, lead to changes in behaviours? There is a growing body of research that outlines the process, determinants and consequences of updating beliefs on outcomes in topics extending from educational decisions and employment outcomes to corporate financial decision on future production levels (e.g. Huffman, Raymond, and Shvets, 2019; Lazear, 2016; Malmendier and Tate, 2005; Meikle, Tenney, and Moore, 2016; Otto, 2014; Spinnewijn, 2015; Stinebrickner and Stinebrickner, 2012; Van den Steen, 2014). A key aspect of this work is to establish the direction and magnitude of the relation between belief updating and outcomes. A study by Stinebrickner and Stinebrickner (2014) utilized a panel survey on undergraduate students to model the relation between belief updating, regarding their academic performance, on their major choice and dropout decision. The authors show that students entering university are often over-optimistic about their chances of completing a science or math degree, and that through the process of learning about their own abilities, through observing grade performance, the ultimate choice of major taken, or dropout, changes. Bond et al. (2018), on the other hand, use a natural experiment to test updating beliefs through a shock to beliefs, in the form of PSAT and SAT scores, on human capital decisions. In their case the choice of college or university to apply to. The authors measure if students update their college portfolios after receiving a shock of information (SAT scores) on where their position is relative to other students and find that they do update their portfolios in terms of selected colleges.

Armantier et al. (2015) use survey data that measures individuals' expectations on inflation, through an experiment "designed such that future inflation affects payoffs," and find that changes in inflation expectations correlate to choices in the experiment. Another study by Hoffman and Burks (2020) surveys truckers' beliefs of their own weekly productivity level and finds that subjective beliefs are predictive of actual performance and quitting. They find that workers who

[6] The reason for this is hypothesized to be a reflection of language abilities or certification problems, most often present in refugee populations that were unable to bring necessary paperwork or have time to invest pre-flight.

expect higher productivity levels actually achieve higher outcomes than those who expected lower ones. They also find that workers are generally "over-confident" in their abilities, which is persistent even in the presence of learning (knowing actual productivity level for the prior week). Yet, another study by Lange (2007) concentrates on belief updating on the side of the employer to try to determine how fast updating affects hiring discrimination. They find, through simulating labour market outcomes, that discrimination due to education premium effects are greatly reduced rather quickly (50% in 3 years) and that overall statistical discrimination in terms of schooling decreases over time. Through these studies, and many others, researchers have established that there is a definite and significant effect of belief updating on actual outcome.

Finally, there have been recent studies that have combined both the concept of belief updating, through the presence of good and bad information shocks on an ultimate outcome decision (Eil and Rao, 2011; Grubb and Osborne, 2015). A more recent study by Barron (2020) uses an experiment to check if people update their beliefs in a Bayesian sense to the same level if the information shock is positive or negative. He finds that on average people update beliefs in a Bayesian sense for both cases and irrespective of if there is or is not financial incentive. Suggesting that belief updating seems to be context dependent.

The closest study to modelling difference in beliefs after the presence of new information relayed by the market is by Conlon et al. (2018), which uses panel data on individual's labour market expectations and realizations. They model a "shock" to beliefs, given the presence of new information, as the difference between expected wages and actual wage offers. Using this definition of a shock leading to belief updating (in their term - learning) they simulate and calculate the gains (losses) in terms of labour market entry, e.g. acceptance of wage offers that may not have been optimal. Other recent literature examining these types of shocks has concentrated on decision makers in financial institutions or businesses (Bachmann and Elstner, 2015; Coibion, Gorodnichenko, and Ropele, 2020; Enders, Müller, and Hünnekes, 2019). These studies use micro-level firm data on expectations of future and current production or investment outcomes. They define a shock to beliefs as the *difference between expected outcome and current outcome* and relate these "pessimistic" or "optimistic", e.g. negative or positive, shocks to actual production or investment outcomes.

These types of studies are readily applicable to individual level decision making, as outlined above, and specified theoretically by Bodvarsson and Van den Berg (2013) and Sjaastad (1962). Hence, I follow theirs, and Conlon et al. (2018)'s approaches in this study to model my change in beliefs variables which capture the presence of learning. Furthermore, I use the above literature to inform the controls used in this analysis as well as explain the mechanisms that may be driving my results.

Part III.

Results

4. The Role of Trauma for Integration: The Case of Syrian Refugees

Over the previous decades, international migration has become an increasingly diverse and widespread phenomenon (De Vroome and Van Tubergen, 2010). Recently push factors, e.g., wars, conflicts, hunger crises, have grown in importance compared to pull factors, e.g., labour shortages in receiving countries. This change has prompted an increase in other forms of migration, especially in the movement of asylum seekers and refugees[1], to gain more relevance in the political discourse compared to the previously dominating labour and family migration (see also Massey, 1998, p. 13). While there is extensive research and knowledge on labour and family migration, less research has been conducted on refugees (De Vroome and Van Tubergen, 2010). The few studies focusing on refugees' economic integration, e.g., labour market outcomes (OECD, 2016, p. 10) or language learning (Chiswick and Miller, 2001, p. 404) find that they integrate more slowly compared to other types of migrants.

It is likely that specific aspects of refugee migration are relevant for the slower integration process. Refugees have often experienced war, suppression and other potentially traumatic situations before and during migration (ECRE et al., 2017, p. 14). Health problems can in turn be an important explanation for slower integration (e.g., De Vroome and Van Tubergen, 2010; Dietrich et al., 2019; Hauff and Vaglum, 1993; OECD, 2016). Several studies have correlated the existence of witnessing traumatic events with consistently higher incident rates of mental health problems (e.g., Böttche, Stammel, and Knaevelsrud, 2016; Bustamante et al., 2017; Crepet et al., 2017; Kane et al., 2014; Kirmayer et al., 2011; Lindert et al., 2009). The call, brought forward by NGOs and others, such as EFD (2018, p. 12), Dietrich et al. (2019, p. 80), McKinsey Global Institute (2018, p. 1) and Leopoldina (2018, p. 4), for authorities to (systematically) screen refugees for physical and mental health problems at arrival and to provide immediate psychological trauma therapy to avoid these problems becoming an obstacle for integration, has some face validity.

The above reasoning, however, neglects that extant research falls short of establishing the mechanisms by which traumatic experiences occurring before and during migration, or rather their resultant health problems, hinder integration. Moreover, most previous studies cannot distinguish whether traumatic experiences before arrival or post migration stressors lead to obstacles in integrating in the new country. Previous research has focused on the relationship between the number of traumatic experiences and the conditions under which they result in psychological distress, depression, or post-traumatic-stress disorder (Cheung et al., 2018, e.g.). This research, however, rarely connects mental health problems to integration activities or outcomes. Moreover,

[1] If not specified otherwise, we use the term "refugee" colloquially and mean all persons who left their home country for humanitarian reasons, irrespective of their legal status. This includes recognized refugees, persons who have been granted asylum, asylum seekers, tolerated persons, etc.

it is often based on small or selective clinical samples. Other research compares labour migrants to refugees and consistently finds higher rates of mental health problems (Lindert et al., 2009, e.g.) and adverse integration outcomes for the latter (OECD, 2016, e.g.). In these studies, it remains unclear whether traumatic experiences before and during migration or higher levels of post-migration stress trigger mental health problems.

All migrants have some additional burden of adjusting to a new environment (Bustamante et al., 2017; Foster, 2001; Haasen, Demiralay, and Reimer, 2008, e.g.). However, several factors can lead to possibly higher post-migration stress on refugees. Refugees often have less time to plan and prepare for migration (Chiswick and Miller, 2001, p. 394) and often receive more precarious, e.g., short-term, residence statuses (ECRE et al., 2017, p. 12). Therefore, they may experience higher levels of post-migration stress. Yet, as most of these studies are based on data collected years after migration and usually do not include information on pre-migration trauma, it is uncertain whether higher levels of post-migration stress, traumatic experiences before and during migration, or some combination of the three is the underlying reason for the hindrances witnessed in integration.

The present research overcomes both problems outlined from the literature by using data for a representative sample of Syrian migrants collected shortly after their arrival in Germany. The data includes measures for integration and activities leading to integration. Moreover, we have detailed information on a comprehensive set of potentially traumatic events experienced. This information includes the time they occurred and the effect they had on a person, for more information on the survey please see section 2.1. We find that Syrian refugees experienced a considerable amount of traumatic experiences in Syria and during their flight to Europe. In our study, we focus on the structural integration outcomes of these recently arrived refugees, through measuring entry into the job market and the education and training system in the new country, as well as language acquisition (cognitive-cultural integration), which unarguably is key for entry into the structural sphere and most other aspects of integration. Overall, we find that there is actually a positive effect of traumatic experiences on cognitive-cultural integration, i.e., language acquisition, and close to zero effect on structural integration outcomes, i.e., employment and education. Undoubtedly, traumatization and mental health problems can take a longer period than observed in our data to evolve and become an obstacle for integration. Therefore, appropriate measures to screen and treat Syrian refugees should be taken in any case, given the high number of traumatic experiences present.

4.1. Research setting: Syrian refugees in Bavaria

We examine refugees from Syria, a country that has experienced long-term political and military strife most notably from 2011. The crisis in Syria has produced a large-scale movement of refugees and displaced persons escaping the current civil war. Many of these individuals reached Germany in the immigration wave of 2015. Indeed, Syrian refugees are still the largest group of asylum seekers in Germany (BAMF, 2019a, p. 18), comprising of 27.3 percent of asylum applications in 2018. After the Turkish and Polish populations, they now constitute the third largest foreign population in Germany (DESTATIS, 2019). They also have the highest likelihood to receive the legal right to stay in Germany (BAMF, 2019a, p. 38) and therefore, they are given more resources

and help from authorities to integrate, e.g., more rapid access to education, employment and administrative help, compared to other groups of recent asylum seekers.

Studying Syrian migrants in Germany shortly after their arrival is strategic for examining the role of traumatic experiences on integration. On average individuals in our sample have been in Germany for 1.5 years. 87.5 percent of the sample have been in the country less than two years (minimum stay was 2 months; maximum stay was 3.8 years). Using our sample, we are therefore able to observe the initial stage towards integration in this population. Due to the Syrian civil war, we can clearly establish a prominent series of countrywide events, wherein traumatic events have occurred and were experienced. Given the reports on the situation in Syria and on the major transit routes in the years since 2011, there is reason to believe that almost all individuals living in Syria at the time were at risk of experiencing traumatic events.

4.2. Method

Using the literature on the role of trauma on integration and the possible mitigating influence of coping mechanisms, see section 3.1, we build our analyses as follows.

4.2.1. Data and Procedures

We use the survey data collected by the Qualifications, potentials and life courses of Syrian asylum seekers in Bavaria (QPLC) project. The QPLC survey targeted persons aged 18 or older with Syrian nationality who entered Germany starting from 2014 in order to apply for protection, and who lived in Bavaria during the field period (May to December 2017). It used multi-stage weighted random sampling on regional district/town, facility and within facility level, with the assumption that the number of target group individuals per geographical region is proportional to the number of refugees housed. 275 interviews were conducted. The response rate was 46.8 percent. Even with a comparatively small sample, the QPLC project found no large difference between the realized sample and population averages from the German national statistics office of 2016, see section 2.1.[2] Interviews were collected using Computer Assisted Personal Interviewing (CAPI) by bilingual interviewers, who were from Syria or neighbouring countries and who spoke a similar Arabic dialect.

4.2.2. Measures

We use two measures of structural integration by looking at the pathways of entrance into the labour market –- direct (employment) and indirect, i.e., acquiring labour market skills through first completing an academic or vocational course. Structural integration variables are binary and

[2] The QPLC sample seems to exhibit some differences with the IAB-BAMF-SOEP 2016 sample. The differences are rather due to migration patterns exhibited by this population rather than sampling strategy (for details see section 2.1.

capture whether a person is currently in employment (full-time, part-time and in-company training) or in education (tracks towards secondary school or university degrees, vocational training or professional courses/retraining, but not language or integration courses). Cognitive-cultural integration is assessed by looking at the ability individuals have at successfully understanding their receiving country counterparts, through examining language abilities. Language abilities were measured by a combined score from two exercises given to respondents: one that asked respondents to recognize the proper German noun and article of five pictures shown and the second asked respondents to correctly place words into three or five sentences. The language test score used was created using a one-parameter logistics model.

To measure traumatic experiences, the QPLC uses an adapted version of the survey of lifetime traumatic events originally developed by Breslau and Kessler (2001), including the extensions to measure the direct effect of traumatic experiences on people who lived in war-torn countries developed by Shmotkin and Litwin (2009). The survey asks respondents to recall if they have experienced any of 10 events that cover wartime injury or death, terrorism and violent experiences in Syria and on their route out of the country.[3] Four of the items refer to experiences that directly affect the respondent's well-being and life, four refer to events affecting close friends or family members and two items look at events that have occurred to strangers. Respondents were then asked to identify when these events happened and the effect that they may have had on them (great, moderate, or little effect). In this analysis, we concentrate on all 10 events that have occurred since the breakout of the civil war in 2011. We further break down the trauma variable into three categories: experiencing none of the 10 events since 2011, experiencing one and experiencing more than one. We construct the traumatic events variables in this way, as we cannot assume that there is an equidistance between numbers of traumatic events experienced. In separate analyses, we found no evidence of an additional effect beyond the distinction made here.

We use two measures for coping mechanisms: first, a measure for the availability of family support, which combines the existence and location of family members. The binary indicator for family available is set to one if the respondent has a partner and/or children and they are with the respondent, and to zero in all other constellations. Second, we use a measure for resilience derived from the Brief Resilience Scale (BRS) developed by Smith and colleagues (2008). The BRS was developed to measure the "coping abilities" in a given population and has been validated in other studies. The scale involves six-items, which runs from one to five and divides the population into three rankings: low, normal and high resilience.

For current (mental) health the QPLC survey asks respondents to rate their health using a five-point scale from excellent to poor at the time of the interview. We also include a binary measure for mental state, where respondents were asked if they generally feel anxious, depressed and/or stressed.

The measures for the other conditions of integration are: intent to stay which distinguishes between uncertain ("don't know"), short-term ("one year", "a few years", "until Syria is safe") and long-term ("forever") intentions. Residence status distinguishes between full refugee/asylum status, which is the most-long term and secure status, subsidiary protection and other status, e.g.,

[3] Originally the survey asks about 12 incidences. We drop two in our anaylsis that relate to having something stolen as they do not, arguably, compare in magnitude to the other 10 events.

the asylum application is still in process. The indicator for family available is explained above, as it serves as coping resource. Age at arrival in Germany is a year-exact measure. Duration of stay is a month-exact measure and converted to years. Education in the country of origin was asked in detail and is converted into ISCED levels. Co-ethnic network in Germany is measured through a binary variable that takes into account if the respondent knew someone in Germany and contacted this person before leaving Syria. Note that as language ability is an essential condition for structural integration, we use the above-described language test as an independent variable for employment and education. Furthermore, in all models we control for gender.

4.2.3. Multiple imputation

We used multiple imputation to impute missing values on independent variables in order to maximize the use of available information and minimize complete case analysis bias (Rubin, 1987).[4] We imputed mostly small fractions on several independent variables (see Table A.1). The language test, which serves as both an independent and dependent variable, was imputed for those respondents for whom highly correlated interviewer assessments of German abilities were available as an auxiliary variable ($r = 0.58$, $p < 0.01$). The structural integration measures were not imputed. List-wise deletion on all three dependent variables results in an analysis sample of 252 cases, i.e., 91.6 percent of all observations.

4.2.4. Identification

The above discussion suggests that a reduced-form equation relates integration, i.e., the structural integration outcomes labour market access and entry into the educational system, as well as language acquisition, to specific conditions that shift the supply and demand curves determining perceived utility of these investments. Thus, the reduced-form equation can be written as:

$$\text{Integration}_i = F\left(\text{Opportunity}_i, \text{Motivation}_i, \text{Costs}_i, X_i\right) \tag{4.1}$$

where X_i represents individual specific characteristics, such as gender.

Using the specific conditions affecting opportunity, motivation, and costs outlined above and in section 3.1, the model generates three conceptual equations, one for each integration outcome of interest: current employment, current education and German language abilities. For a list of the variables considered in each equation and specification, with their hypothesized signs, please refer to Table 3.1 in the theory section.

We estimate three specifications for each outcome. The first includes traumatic experiences and the other conditions for the opportunity, motivation and costs. The second adds coping resources (resilience and having the immediate family around) and their interaction. In the third specification, we replace traumatic experiences and coping mechanisms with measures for current

[4] Variables were imputed 25 times using chained equations as implemented in the statistical software package Stata 14.2. Missing values are replaced iteratively using a sequence of univariate imputation methods with fully conditional specification of prediction equations.

perceived health and an indicator for currently feeling anxious, stressed or depressed to see if taking the current overall (mental) health state, is an influential predictor of integration. Note that the first and second specification rely solely on the potential effects of pre- and during migration traumatic experiences on the outcomes. In contrast, the third specification captures potential effects of all four stages of "immigrant trauma" (Foster 2001), including continued trauma during resettlement and post-migration stress. Hence, we further define the specifications as:

Specification 1:

$$\text{Integration}_i = \alpha + \text{Trauma}_i\delta + \text{OtherCond.}_i\beta + \gamma\text{Female}_i + \epsilon_i \tag{4.2}$$

Specification 2:

$$\begin{aligned}\text{Integration}_i = \alpha &+ \text{Trauma}_i\delta + \text{CopingResources}_i\theta \\ &+ \text{Trauma}_i \cdot \text{CopingResources}_i\tau + \text{OtherCond.}_i\beta + \gamma\text{Female}_i + \epsilon_i\end{aligned} \tag{4.3}$$

Specification 3:

$$\begin{aligned}\text{Integration}_i = \alpha &+ \phi\text{Health}_i + \sigma\text{FeelingAnxiousDepressedStressed}_i\beta \\ &+ \text{OtherCond}_i + \gamma\text{Female}_i + \epsilon_i\end{aligned} \tag{4.4}$$

where ϵ_i is the error term.

We identify the effect of traumatic experiences and the other conditions on the structural integration outcomes using linear probability models and OLS models for the language test. All models are estimated with robust standard errors.

4.3. Analysis

Our sample is relatively young with a mean age of 29 years old at arrival. Most have a lower to upper secondary degree from their home country and have been in Germany for an average of 18 months. Most of the sample are not married, but of those, most live with their partners and children. In terms of intent to stay, a little over 40 percent are unsure, while a third would like to stay long-term. Finally, as expected, the majority have a more secure residence status (full refugee/ asylum) rather than less secure, i.e., subsidiary protection.[5] For a full description of the control variables used in our analysis see Appendix A.1, Table A.1.

[5] The major difference between the more secure statuses and subsidiary protection is those with the latter are not entitled to easily bring their family with them to Germany, and initially only have the right to stay for one year rather than three before having to reapply for further stay.

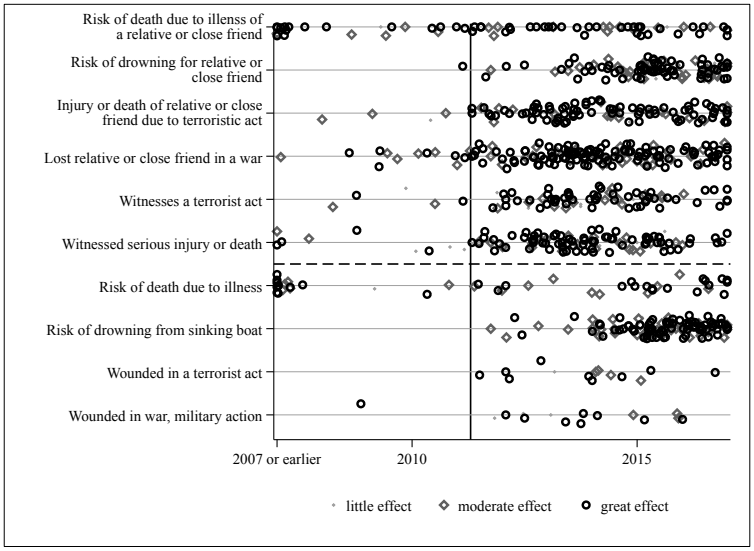
4.3.1. Traumatic experiences

Examining the distribution of traumatic events in the sample, we find that the majority of traumatic events reported occurred since the beginning of the Syrian civil war (Figure 4.1). Moreover, there is a strong concentration of reported events between 2013 and 2016, which, arguably, was a more intense period of the war. Reporting events related to the war are more present in years that correspond to the increase in attacks by the Syrian regime (2014 to 2016) and Daesh's advance in 2013.[6] Furthermore, we find that traumatic experiences related to flight are more commonly reported from 2015, i.e., when large numbers of Syrian refugees made their way to Europe. For example, "risk of drowning from a sinking boat" is more likely reported as occurring in the time frame from 2015 to 2017 than prior, while "loss of a close friend or relative" and "witnessed serious injury or death" is reported more evenly throughout the entire time frame. In the analysis below, we will focus on events that occurred since the beginning of the Syrian civil war in 2011. We find that only 15 percent of the respondents state they have not experienced any of the ten traumatic events since 2011, 12 percent experienced one of the events, while the majority, 73 percent, have experienced more than one traumatic event.

The high frequency of several traumatic events experienced corresponds to field reports of high incidences of trauma in this population (ECRE, 2017; Leopoldina, 2018). Figure 4.1 also shows that the vast majority of incidents are reported to have had a great effect on respondents' life. The results hardly change when limiting the trauma measure to only experiences with great effect. By itself, the observed high frequency of traumatic experiences, suggests that the widely proclaimed argument in the literature, that the potentially high mental health cost that comes from experiencing trauma, can indeed lead to detrimental effects on the process of integrating in a new society.

However, although the presence and frequency of traumatic events is clearly witnessed in this sample, one can argue that perhaps the pervasiveness of the phenomenon does not hold for the entire Syrian population. That is, some groups of individuals may have experienced more traumatic events concerning the war and flight out of the country more than others. Additional analyses show that such a selection is not, largely, the case (see Appendix A.2).

[6] The military crackdown on protests occurred since April 2011; Daesh expanded its territories from November 2012 to April 2013; chemical attacks and massacres by mercenaries and Syrian army forces occurred since 2014. The resurgence of Assad's power started from 2013 with the raids and violence on rebel-controlled locations in Syria and the Russian intervention to aid Assad started in 2015 (Davenport, 2017).



Notes: We used jittering (5 percent) to prevent over plotting. Events reported before 2007 were set to 2007. The vertical line marks the onset of the civil war in Syria in the spring of 2011. The horizontal dashed line separates the four traumatic events affecting the respondent's own well-being and life from the events witnessed to others and the events affecting relatives and close friends.

Figure 4.1.: Traumatic experiences reported

4.3.2. Integration

Table 4.1 provides summary statistics of the integration outcomes observed. For structural integration, we find that 9.5 percent of the sample state that they are currently employed, and 15.9 percent are enroled in an educational track. These percentages may seem relatively small; however, these measures are taken at a time close to arrival. Hence, there may be delays in educational or labour market attainment until sufficient language proficiency is reached. The summary statistics for the cognitive-cultural aspect of integration indicates that there is a large variance in performance when it comes to German language abilities.

Table 4.1.: Summary statistics of integration measures

	Imputed data	Original data				
	Proportion/ Mean	Proportion/ Mean	St. dev.	Min.	Max.	N
Employed (currently)	not imputed	0.095		0.000	1.000	252
Education (currently enroled)	not imputed	0.159		0.000	1.000	252
German language abilities	-0.114	0.003	0.799	-2.286	1.581	202

We now turn to the regression analysis predicting three integration outcomes (Table 4.2, Table 4.3 and Table 4.4 collected at the end of the chapter). We will first discuss the results taking into account traumatic experiences and coping mechanisms (specification 1 and 2 in columns M1, M2a, M2b) and then look at the effects of current health and mental state (specification 3 in column M3). Tables 4.3 and 4.4 for the structural integration outcomes show average marginal effects from linear probability regressions, while the cognitive-cultural integration in Table 4.2 shows

OLS results. We ran several robustness checks; the results did not differ much from the findings presented below (for details see appendix A.3).

The first specification estimated for each outcome takes into account the effects of *traumatic experiences*. Note that we first look at a specification without the interactions for coping mechanisms. With regard to cognitive-cultural integration, we find a positive effect of experiencing at least one or more than one traumatic event (Table 4.2, M1). Experiencing one event increases the language test score by 0.38 points compared to experiencing none. The increase is only 0.28 points when more than one traumatic experience was reported. For the structural outcomes, we find that the coefficients for one or more than one traumatic event are very close to zero, and none of these are significant at any conventional level (Table 4.3 and 4.4, M1).

The predicted positive relationship of traumatic experiences with motivation, as well as the negative relationships with opportunity and costs in the investment model of integration, see Table 3.1, allows for a precise interpretation. In order to find positive effects of traumatic experiences on cognitive-cultural integration, the implication is that refugees with more traumatic experience have a very high motivation to stay in the new country and to that end learn the language. We cannot rule out negative effects on opportunity and costs, but if there were, apparently, the motivational aspect absorbs possible negative effects of traumatic experiences via lower opportunities or higher costs from trauma. Furthermore, that we find positive results on cognitive-cultural integration compared to structural integration is not, in itself, surprising as in line with our expectations, language acquisition is a natural first step into structural integration. Moreover, the reported effects could also partially be due to the limited role of costs of language learning in this population. The costs of language courses and language learning have been decreased immensely by the German state and a culture of welcoming in the general public for Syrian refugees. Finally, structural integration may take more time than we observe on average in this data.

Given individual differences in *coping resources*, the above-described results might mask negative effects of traumatic experiences, if these coping resources were systematically related to the number of traumatic events experienced. Adding coping mechanisms (specification 2), i.e., their expected interactions with traumatic experiences, we find that the overall effects of traumatic experiences remain about the same. Starting with cognitive-cultural integration, remarkably refugees with high resilience and one traumatic experience show considerably lower language test results (the interaction effect is negative and marginally significant, Table 4.2 column M2a). For the group of highly resilient refugees with more than one traumatic experience this unexpected effect no longer appears. The interaction effect, albeit insignificant, switches signs to positive. Moreover, the main effect of one trauma, i.e., the effect of traumatic experience for medium or less resilient refugees still increases the test score performance even more than before to 0.48 points. Turning to the structural outcomes, the interactions between trauma and resilience are mostly positive but insignificant (Tables 4.3 and 4.4, M2a). Interacting the second coping mechanism, family availability, with trauma leads to mostly positive, yet rather small and insignificant, effects on all three integration outcomes. Yet, we find a significant impact of the family coping resource with experiencing more than one trauma on education, e.g., an increase of 25 percent on enrolment probability. Predicted probabilities show, however, that taken with the negative main effect of family presence, this implies that regardless of this coping resource, an individual ends up not being either negatively or positively affected by family presence in terms of educational enrolment. Hence, as we do not find systematic and substantial overall changes to the established effects

of trauma, coping mechanisms do not seem to be playing as great a role as expected from the literature. Indeed, this may be the case as the expected effects of traumatic experiences, i.e., significant negative effects, do not actually seem to be present. Therefore, it could simply be the case that regarding the effects on integration outcomes there is little to "cope" with.

Turning to our third specification, which relies on the *current overall health and mental state* of the individual, we find expected effects in either the self-assessed health or mental state measure. For language acquisition, we find that a one-point increase in self-assessed health significantly increases the language test score by 0.13 points (Table 4.2, M3). Mental state, measured as feeling anxious, depressed or stressed has no significant effect. The same pattern is observed for employment: health significantly increases the probability of employment by 3 percent, while mental state shows no significant effect (Table 4.3, M3). In contrast, for more long-term educational investment, we observe no significant health effect; however, feeling anxious, depressed or stressed decreases the probability of educational enrolment by 10 percent (Table 4.4, M3).

The findings regarding current (mental) health are in line with our expectations. Good overall health and better mental health is expected to help in integration. However, while adding these measures significantly improve the model fit, the explanatory power, e.g., when comparing the adjusted share of variance explained with specification M1, does not improve greatly. Hence, though current (mental) health is a relevant predictor it may not play as a large role as suggested. Furthermore, note that current health and mental state may also be influenced by post-migration adaption stress, which is not specific to refugee migration.

Regarding the *other conditions influencing integration*, we first focus on those specific to refugees or for which we expect deviating results for refugees (Table 4.2, 4.3 and 4.4, M1). Having either a secure (full refugee/asylum) or insecure (subsidiary protection) residence status does not seem to have any significant effects on our integration measures in this group. In contrast, intent to stay influences some integration investments. Short-term intent to stay in Germany, compared to uncertain intentions, decreases the German language test score by 0.29 points. We also find a positive and significant effect of 14 percent of short-term intent to stay on current employment. Intent to stay has close to zero effect on educational enrolment. Overall, the findings regarding intent to stay are not completely in line with literature's expectations (see Table 3.1). We had expected those with long-term intent to stay to be more motivated to invest in receiving-country specific human capital than those with short-term or uncertain intent to stay. The findings regarding the availability of family are partially in line with the theoretical expectations. For educational enrolment, we find a negative and highly significant effect of -11 percent. This suggests that the motivation for educational investment is greatly decreased given the presence of family. For the other integration outcomes, German language abilities and current employment, the effects of family presence are smaller and not significant.

For the most part, we find the signs of the remaining *other conditions* in line with our theoretical expectations (Table 4.2, 4.3 and 4.4, M1). The magnitude of the effect of the age an individual arrived in Germany is relatively small for all outcomes, but negative as expected, and somewhat larger and significant in the case of education. Education at the country of origin is significant and mostly in line with the hypothesized signs in Table 3.1 for all three outcomes. When looking at language acquisition those with higher levels of educational attainments, learn more (or rather faster) German, with an increase of 0.4 to 0.5 points, compared to those with primary or less

education. Regarding current employment, compared to all other education levels, those with a tertiary level of education show a significant positive effect of 15 percent increase in probability to be employed. This relation is reversed for education. Here we find a positive and significant effect for those with lower secondary education levels to invest in education in the new country by an increase of probability of 11 percent. Therefore, the general pattern of these effects is in line with our expectations, even though we initially expected more gradual effects for medium and high levels of education. Having a pre-migration co-ethnic network in Germany has a significant negative effect for language acquisition, and close to zero effects on structural outcomes. Looking at duration of stay, we find a highly significant effect on German language test scores in the case of cognitive-cultural integration, with an increase of 0.30 points. For current employment, we find a close to zero effect of duration. Moreover, we again find an overall positive significant effect of duration in Germany of 7 percent on educational enrolment. These findings taken together with the effects of the intent to stay, imply that the length of time in Germany is important in the decision to invest in education; while the direct entry into the labour market is more highly associated with short-term intent to stay. Finally, German language ability for the structural integration outcomes, employment and education, are all positive and in the case of employment show a significant effect of around 6 percent probability increase, which is maintained in the other specifications. We do not find significant differences regarding gender. This is partially due to also controlling for family composition.

4.4. Summary and conclusions

We analysed the effect of traumatic experiences before and during migration on integration for a representative sample of Syrian refugees. Our study addresses a few key factors that were missing in the literature. First, we propose possible mechanisms as to how traumatic experiences influence integration investments. Second, we use measures of traumatic experiences that distinctly capture pre and during migration stressors. Third, the data was collected, on average, only 1.5 years after arrival; therefore, the potential reverse effects of post-migration adjustment stress causing mental health problems which may in turn foster further integration problems can be regarded as minimal.

We find that Syrian refugees in Germany experienced a high number of traumatic events in Syria and during their flight to Europe. The analyses show that the whole population arriving in Germany was at risk of experiencing traumatic events; hence, it is not surprising that frequency rates of one or multiple traumatic experiences is very high. While we could not directly analyse, whether traumatization led to mental health problems, we could relate pre-migration trauma to integration outcomes. In sum, we find, contrary to the popular expectation, positive and often significant effects of one or more than one traumatic experience on cognitive- cultural (language) integration outcomes, and close to zero and insignificant effects of traumatic experiences on structural integration. This pattern of effects suggests that refugees with more traumatic experiences have a higher motivation to integrate than refugees who did not experience these traumatic events. While the design of this study does not allow ruling out negative effects on opportunity and costs of integration, apparently the motivation aspect is more important. Finding positive effects of traumatic experiences for cognitive-cultural integration, but not for the structural outcomes is

not surprising as often language acquisition is a necessary step into entering structural spheres. Including coping mechanisms did not change the overall results on traumatization. These findings suggest that the existent priors on the negative effects of experiencing (more) traumatic events on integration outcomes in the short run are erroneous.

Refugees not only differ from other migrant groups with regard to having experienced more traumatic events before and during migration. They also often have less time to plan and prepare for migration. Therefore, they may experience higher levels of post-migration stress. Indeed, we find that differences in current (mental) health are predictors for all three integration outcomes investigated. These measures incorporated pre, during and also post-migration stressors. However, they seldom changed the overall results, nor did they add considerably more explanatory power to our analysis.

In sum, our findings contradict popular expectations; however, they are actually in line with psychiatric literature that espouses that people have a high capability of dealing with difficult situations and that often experiencing trauma does not automatically determine developing mental health problems (e.g. Jakšić et al., 2012, p. 256). Public debate presumes a straightforward causal chain of pre-migration traumatic experiences increasing the likelihood of mental health problems, and these, in turn, interfering with activities leading to integration. This reasoning neglects alternative mechanisms potentially at work. Moreover, most of the limited empirical work to support this reasoning, due to data limitations, may have confused, post-migration adjustment stressors with pre-migration traumatization. Our results suggest that in the short run especially highly traumatized refugees may choose to embark in integration especially in the case of language learning. The fact that we see this result, even when coping mechanisms are factored in, suggests that pull factors after experiencing trauma is a driving force into making the decision to integrate at some level, e.g., that the motivation to integrate outstrips the opportunity and costs associated with it.

This study also informs the question on whether the integration of refugees is an exceptional case of the general immigrant integration process. In comparison to traumatic experiences and current (mental) health, other conditions identified in mostly non-refugee migrant populations, e.g., education or age at arrival, play a substantially larger role in Syrian refugees' integration in Germany. Even though some of the expected relationships did not show, the share of variance explained by conventional predictors of integration is considerably higher than the specific conditions associated with refugees. Some of these unexpected effects can be explained in the context of the specific migration history. For example, having a co-ethnic network in the new country can have positive effects on integration outcomes for newcomers in general. Assuming that the vast majority of the contacts reported in our sample have only been marginally longer in the country puts the unexpected result into perspective. With regard to the unexpected effects of the intention to stay, we suggest that the temporary residence status of refugees, contingent on the conflicts and other reasons to flee from their home country, play a central role in the expected length of stay. Thus, while refugee integration is special to the extent that traumatic experiences increase the motivation for integration and expected length of stay needs a more elaborate measure than used in this study, we conclude that in general the mechanisms at work do not differ substantially from the general immigrant integration process.

This study suffers from some limitations. The initial welcoming culture in the general public (Willkommenskultur) especially for Syrian refugees might have been a resource, also to cope with traumatic experiences, which is not available to the typical refugee. Unfortunately, the lack of a control group does not allow us to explore this further. Other large-scale studies that would allow comparing different refugee groups and other migrants did not collect data on traumatic experiences pre and during migration.[7] Moreover, due to the small sample size, and the cross-sectional nature of the QPLC study, we are limited in identifying causal effects even when traumatic events measured happened pre-arrival. One way to mitigate this problem is by conducting a power analysis, which, in essence, would allow the researcher to determine the needed sample size to estimate statistical significance. Unfortunately, this method requires established priors on the effect's magnitude. As outlined in the literature review, unfortunately, to our knowledge, this prior does not actually exist, nor can one be easily assumed, given the nature of the treatment of concern (effects of traumatic experiences on structural and cognitive-cultural integration). Therefore, the possible mechanisms outlined above need to be further tested. Moreover, our measure for trauma, while based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) and grounded in research on the measurement of traumatization and PTSD, cannot be as thorough as a full mental health screening. Finally, another concern is the use of retrospective self-reports on traumatic experiences, where some individuals may have exaggerated reports of the events they experienced. However, we do find that the number and timing of reported events fit the official reports on intensity of the conflict and the timing of mass emigration from Syria reasonably well.

[7] To our knowledge, the only large-scale panel study on refugees in Germany that collected data on traumatic events, the IAB-SOEP-BAMF study, only ask for potentially traumatic events during transit, but not on events being experienced in the country of origin (TNS Infratest Sozialforschung, 2016). Moreover, only 61 percent of respondents answered the questions on traumatic experiences during transit (Brenzel et al., 2019).

Table 4.2.: Cognitive-cultural integration: German language test

	M1	M2a	M2b	M3
No traumatic exp. (ref.)				
1 traumatic exp.	0.378*	0.483**	0.263	
	(0.208)	(0.242)	(0.276)	
>1 traumatic exp.	0.280*	0.176	0.043	
	(0.162)	(0.199)	(0.222)	
*Traumatic exp. * Coping resources*				
1 traum. exp. * Resilience high		-0.660*		
		(0.391)		
>1 traum. exp. * Resilience high		0.482		
		(0.319)		
1 traum. exp. * Family available			0.106	
			(0.411)	
>1 traum. exp. * Family available			0.528	
			(0.322)	
Health (self-assessed)				0.127***
				(0.046)
Feeling anxious/ depressed/ stressed				0.097
				(0.130)
Residence status (Ref.: other status)				
Subsidiary protection	0.300	0.288	0.327	0.266
	(0.253)	(0.256)	(0.258)	(0.256)
Full refugee/asylum status	0.386	0.373	0.392	0.331
	(0.252)	(0.255)	(0.254)	(0.258)
Intention to stay (Ref.: uncertain)				
Short-term	-0.288*	-0.309*	-0.285*	-0.275*
	(0.161)	(0.161)	(0.159)	(0.162)
Long-term	-0.155	-0.190*	-0.136	-0.168
	(0.114)	(0.115)	(0.114)	(0.113)
Family available	0.108	0.128	-0.263	0.061
	(0.143)	(0.144)	(0.277)	(0.142)
Resilience high		-0.212		
		(0.283)		
Age arrived in DE	-0.007	-0.006	-0.007	-0.002
	(0.006)	(0.006)	(0.006)	(0.006)
Education (Ref.: primary or less):				
Lower secondary	0.456***	0.455***	0.467***	0.442***
	(0.149)	(0.146)	(0.151)	(0.151)
Upper second. +	0.368**	0.366**	0.353**	0.384**
	(0.159)	(0.157)	(0.160)	(0.159)
Tertiary	0.515**	0.490**	0.466**	0.464**
	(0.211)	(0.213)	(0.211)	(0.211)
Co-ethnic network in DE	-0.221*	-0.207*	-0.216*	-0.215*
	(0.118)	(0.115)	(0.118)	(0.118)
Duration stay DE (years)	0.300***	0.335***	0.308***	0.305***
	(0.103)	(0.105)	(0.102)	(0.105)
Female	-0.204	-0.167	-0.218	-0.126
	(0.158)	(0.162)	(0.159)	(0.160)
Constant	-1.036***	-1.054***	-0.859**	-1.356***
	(0.335)	(0.353)	(0.355)	(0.350)
Adj. R2	0.182	0.205	0.191	0.197

Effects from OLS regression models with robust standard errors. Standard errors in parentheses. Multiple imputation of missing values with m = 25. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. N=252.

Table 4.3.: Structural integration: current employment

	M1	M2a	M2b	M3
No traumatic exp. (ref.)				
1 traumatic exp.	-0.054	-0.099	-0.094	
	(0.066)	(0.088)	(0.102)	
>1 traumatic exp.	0.003	-0.018	-0.014	
	(0.060)	(0.077)	(0.096)	
*Traumatic exp. * Coping resources*				
1 traum. exp. * Resilience high		0.171		
		(0.110)		
>1 traum. exp. * Resilience high		0.056		
		(0.103)		
1 traum. exp. * Family available			0.106	
			(0.120)	
>1 traum. exp. * Family available			0.030	
			(0.116)	
Health (self-assessed)				0.027*
				(0.014)
Feeling anxious/ depressed/ stressed				0.019
				(0.043)
Residence status (Ref.: other status)				
Subsidiary protection	0.015	0.016	0.019	0.014
	(0.061)	(0.062)	(0.061)	(0.063)
Full refugee/asylum status	0.051	0.051	0.053	0.049
	(0.056)	(0.058)	(0.057)	(0.058)
Intention to stay (Ref.: uncertain)				
Short-term	0.140**	0.135**	0.142**	0.150**
	(0.063)	(0.064)	(0.063)	(0.063)
Long-term	0.019	0.027	0.019	0.014
	(0.038)	(0.041)	(0.039)	(0.038)
Family available	-0.039	-0.034	-0.072	-0.044
	(0.044)	(0.047)	(0.109)	(0.044)
Resilience high		-0.108		
		(0.085)		
Age arrived in DE	-0.000	-0.000	-0.000	0.001
	(0.001)	(0.001)	0.002)	(0.002)
Education (Ref.: primary or less):				
Lower secondary	-0.037	-0.037	-0.032	-0.043
	(0.051)	(0.051)	(0.053)	(0.054)
Upper second. +	-0.020	-0.022	-0.015	-0.022
	(0.048)	(0.048)	(0.049)	(0.048)
Tertiary	0.151*	0.148*	0.156*	0.151*
	(0.089)	(0.089)	(0.090)	(0.086)
Co-ethnic network in DE	-0.030	-0.025	-0.033	-0.038
	(0.041)	(0.042)	(0.041)	(0.040)
Duration stay DE (years)	-0.013	-0.016	-0.012	-0.010
	(0.028)	(0.030)	(0.028)	(0.028)
German language abilities	0.060**	0.063**	0.060**	0.051**
	(0.026)	(0.026)	(0.026)	(0.025)
Female	-0.043	-0.058	-0.044	-0.024
	(0.043)	(0.046)	(0.042)	(0.046)
Constant	0.098	0.132	0.106	-0.034
	(0.090)	(0.099)	(0.106)	(0.094)
Adj. R2	0.061	0.057	0.055	0.068

Effects from linear probability models with robust standard errors. Standard errors in parentheses. Multiple imputation of missing values with m = 25. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. N=252.

Table 4.4.: Structural integration: current educational enrolment

	M1	M2a	M2b	M3
No traumatic exp. (ref.)				
1 traumatic exp.	0.055	-0.002	-0.014	
	(0.098)	(0.098)	(0.141)	
>1 traumatic exp.	-0.017	0.007	-0.129	
	(0.062)	(0.067)	(0.104)	
*Traumatic exp. * Coping resources*				
*1 traum. exp. * Resilience high*		0.389		
		(0.242)		
>1 traum. exp. * Resilience high		-0.071		
		(0.138)		
1 traum. exp. * Family available			0.103	
			(0.180)	
>1 traum. exp. * Family available			0.249**	
			(0.116)	
Health (self-assessed)				-0.014
				(0.022)
Feeling anxious/ depressed/ stressed				-0.096**
				(0.046)
Residence status (Ref.: other status)				
Subsidiary protection	-0.002	-0.001	0.014	-0.018
	(0.061)	(0.060)	(0.062)	(0.060)
Full refugee/asylum status	0.055	0.055	0.062	0.036
	(0.061)	(0.061)	(0.061)	(0.061)
Intention to stay (Ref.: uncertain)				
Short-term	-0.024	-0.004	-0.024	-0.026
	(0.062)	(0.062)	(0.062)	(0.062)
Long-term	-0.079	-0.067	-0.071	-0.079
	(0.050)	(0.050)	(0.050)	(0.050)
Family available	-0.116***	-0.120***	-0.296***	-0.122***
	(0.043)	(0.044)	(0.102)	(0.042)
Resilience high		0.125		
		(0.122)		
Age arrived in DE	-0.008***	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)
Education (Ref.: primary or less):				
Lower secondary	0.113*	0.102*	0.123**	0.128**
	(0.062)	(0.061)	(0.062)	(0.063)
Upper second. +	-0.044	-0.052	-0.045	-0.038
	(0.051)	(0.051)	(0.049)	(0.051)
Tertiary	-0.068	-0.068	-0.083	-0.070
	(0.065)	(0.062)	(0.066)	(0.063)
Co-ethnic network in DE	0.003	-0.002	0.002	0.010
	(0.046)	(0.046)	(0.046)	(0.045)
Duration stay DE (years)	0.067**	0.060*	0.073**	0.066**
	(0.031)	(0.031)	(0.030)	(0.030)
German language abilities	0.025	0.037	0.017	0.031
	(0.028)	(0.028)	(0.029)	(0.028)
Female	0.020	0.027	0.012	0.021
	(0.047)	(0.049)	(0.046)	(0.052)
Constant	0.307***	0.300***	0.381***	0.402***
	(0.110)	(0.110)	(0.123)	(0.128)
Adj. R2	0.158	0.190	0.167	0.169

Effects from linear probability models with robust standard errors. Standard errors in parentheses. Multiple imputation of missing values with m = 25. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. N=252.

5. Language Proficiency and Economic Incentives: The Case of Syrian Asylum Seekers in Germany

5.1. Introduction

This chapter studies the effect of economic incentives on language proficiency of recently arrived Syrian asylum seekers in Bavaria, Germany. As highlighted in the theory, see section 3.2, a limitation in the literature on the determinants of host country language acquisition is the lack of evidence which relates individual expected economic benefits to language acquisition. We fill the gap in this literature by providing such data.

We contribute to the discourse by collecting unique survey data on recently arrived Syrian asylum seekers in Bavaria. The survey elicited the expected increase in earnings, the chance to obtain a residence permit and the chance to obtain a secure job, from becoming more proficient in German. It also conducted different assessments of the respondents' German language skills. These measures allow for the direct estimation of the effect of economic incentives on language proficiency.

The Qualifications, potentials and life courses of Syrian asylum seekers (QPLC) survey focused on the largest sub-population present in the recent wave of asylum seekers in Germany, Syrians. The fieldwork was conducted in Bavaria in 2017 and collected 275 computer assisted personal interviews (CAPI). Data on subjective expectations about earnings, the chance to obtain a permit and the chance to obtain a job are available for (up to) 141 respondents. The survey asks about the return to language investment levels from the popular Common European Framework of Reference for Languages (CEFR) standard. We focus our analysis on the B1-level, which corresponds to lower intermediate proficiency, as it is the minimum level requirement by the German government to receive more permanent legal statuses and is perceived as the minimum language needed to apply for most jobs in Germany.

Language proficiency is measured using two instruments. Trained interviewers were asked to rate the respondent skills following a short conversation in German. Furthermore, respondents took two short written language tests. On the whole, we find individuals scored relatively low in these tests. For example, 38 percent completely failed to understand the short conversation test.

We find that asylum seekers expect on average a 29 percent increase in monthly wage return, on average 253 Euros, from language acquisition. They also expect an important increase in their chance to obtain a permit (about 25 percentage points (pp)) and chance to obtain a job (28 pp).

Putting language proficiency and expected returns in relation, we find that individuals who expect a higher chance to obtain a permanent residence permit from being proficient have a significantly higher language proficiency. A 10 pp increase in the aforementioned expectation increases the score of the conversation test by about 0.6 to 0.75 standard deviation. However, relations regarding wage returns and chance to obtain a job are not stable.

The structure of this chapter is as such: section 5.2 gives some background information about the survey and the German context. Section 5.3 describes the data of our study and section 5.4 analyses the effect of interest in a multivariate analysis. Section 5.5 outlines the major implications and concludes.

5.2. Background information

The Qualifications, potentials and life courses of Syrian asylum seekers (QPLC) survey was motivated by the necessity to understand the experiences, motivations and investment decisions that newly arrived Syrian asylum seekers in Germany have or undertake. Syrians are the largest nationality present in the recent wave of asylum seekers in Germany, starting in 2014. It is estimated that over 557,000 entered Germany between 2014 and 2018 and applied for asylum protection (BAMF, 2019b). The recognition rate among Syrian asylum seekers was relatively high (97 percent in 2015 and 99 percent in 2016). Most Syrians obtained a rather secure legal status protection for about two years (2015: 97 percent refugee (Geneva convention) status; 2016: 57 percent refugee status and 42 percent other positive decisions) (Burmann and Valleyatheepillay, 2017).

As part of the political push to ensure that asylum seekers are substantially integrated into the German society, asylum seekers, especially those who have a high chance of receiving residence status and remaining in Germany, including Syrians, are required to attend German language courses. These language courses were mostly in the form of an "Integrationskurs" which consisted of mainly language learning but also included lessons on culture, society, and history. Integration courses differ from regular language courses in that: they include an extra cultural, social and history section, are fully subsidized by the state, and only include up to B1-level German language. Indeed, in some cases, benefits could in turn be reduced if asylum applicants did not attend. An integration course normally takes six months, assuming no interruptions (BAMF, 2020a).

An important aspect of the German migration legal framework that relates to our study are the requirements in place for asylum seekers to obtain a permanent residence permit since August 2016. In order to receive this status individuals must prove that they have: sufficient German language proficiency, knowledge of German culture and enough means to secure their livelihood (BAMF, 2019a). Normally they could apply after three to five years depending on their language proficiency level and ability to financially provide for themselves and their family. We show below that asylum seekers correctly expect higher chances to obtain a permanent residence permit if they are more proficient in German. This in turn seems to increase their current language proficiency.

5.3. Data

The target population of the QPLC survey is comprised of persons aged 18 or older with Syrian nationality who entered Germany starting from 2014, in order to apply for protection. The fieldwork was conducted in Bavaria, lasted from May to December 2017 and collected 275 CAPI interviews. The module on subjective expectation was only implemented in the second phase of the fieldwork. Data on subjective expectations about earnings, chance to obtain a permit and chance to obtain a job are available for 141 respondents. The sample is relatively small but comparable to that of other studies that examine subjective expectations (e.g. Beffy, Fougere, and Maurel, 2012; Delavande, 2008; Gong et al., 2019).

In the following, we present the main characteristics of the sample used in this study, as well as the main measures of interest: measures of language proficiency and measures of subjective expectations. For more details on the study, the sample methodology and the sample characteristics, we refer the reader to chapter 2.

5.3.1. Sample characteristics

The sample that received the module on subjective expectation consists of 141 individuals, among them 37 women (26.2 percent). This gender split is closely in line with German statistics on this population. They are relatively young with a median age of 28 years, with an age range from 18 to 66. About 8 percent have never attended school, while 17.7 percent have primary education, 31.9 percent lower secondary education, 24.1 percent upper secondary education and 18.4 percent have some form of tertiary education. Women are generally less educated than men. The respondents have been between 2 and 46 months in Germany at the time of the interview, with a mean duration of 19.5 months. Please see Table B.1, in the appendix, for more information on the sample.

5.3.2. Measures of language proficiency

The test of German language skills comprised of three parts: a word recognition section, a sentence grammar structure section and a short conversation exercise. A common critique in the literature is the use of self-reported language ability (Chiswick and Miller, 2015). In using more objective measures we hope to improve our identification of language proficiency.

The first two tests were paper-pencil tests. For the first part, word recognition, respondents were asked to identify the correct name and article of five images. These images, and their relevant articles, varied in difficulty. Two thirds of the sample only got up to one answer wrong (76.4 percent of the sample participated in this test). Around 41 percent completed the task without faults, e.g. all items solved correctly. The second part, grammatical structures, asked respondents to place German words into the correct grammatical sentence structure. Only 15.3 percent were able to solve all items (76.4 percent of the sample participated in this test). From these items, we construct a test score for each respondent which sums all correct responses (maximum of 8), see

Panel 1 in Figure 5.1. The distribution has a mass at zero, a reflection of the little understanding some respondents had of German. 5.17 percent of the respondents completed both tests without mistake.

Respondents were also asked to take part in a short and simple conversation about the weather, how they liked it and how it differs from their country of origin. The interviewers were trained to rate the conversation in terms of sentence structure, word usage and pronunciation. Scoring followed a predetermined scaling format — a five-point grading scheme adherent to the German grading system [5: insufficient to 1: excellent]. On the whole, we find individuals scored relatively low with 38.64 percent of our entire sample achieving a score of five, i.e. failed to understand at all. The average grade within the sample is 3.57, i.e. "poor". Although, the entirety of the sample performed poorly, on average, women did so significantly more than men with a mean score of 4.05 compared to men's 3.40.

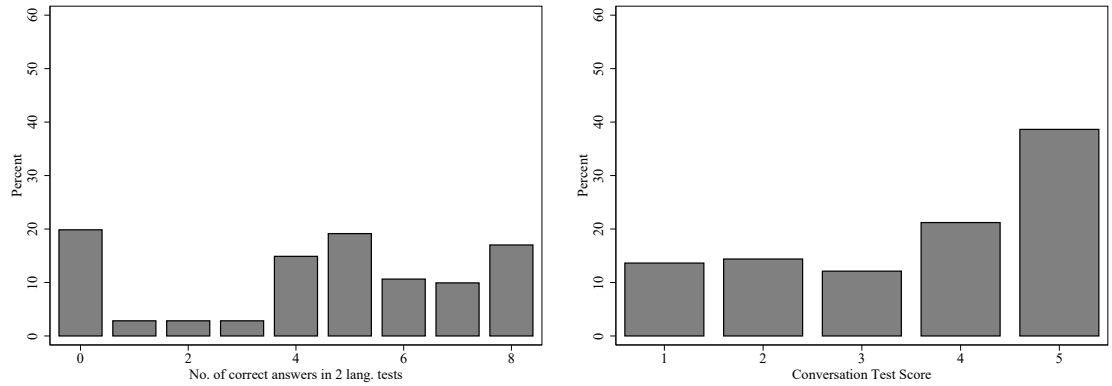


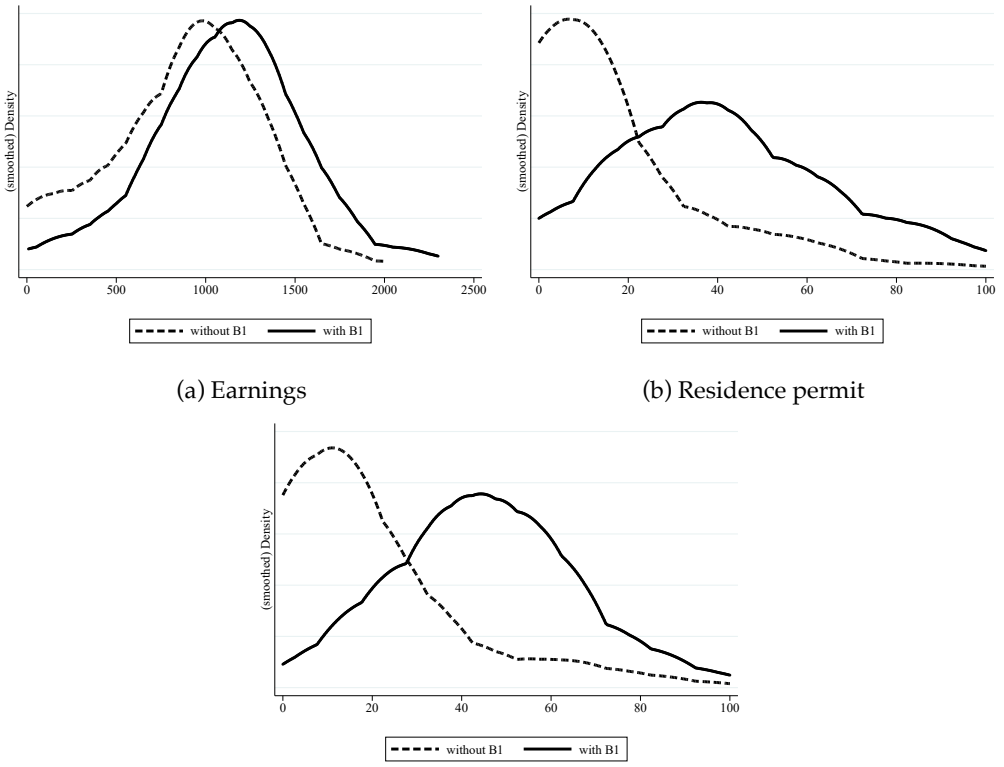
Figure 5.1.: Distribution of language test scores

5.3.3. Measures of economic incentives

The survey included a module on respondents' subjective expectations regarding different human capital investments. Respondents were first trained to provide answers as a percent chance. Understanding of the concept of likelihood was tested using the Hudomiet, Hurd, and Rohwedder (2018) battery of questions. Our respondents generally performed on par with respondents of the Hudomiet, Hurd, and Rohwedder (2018) study.

The respondents were then asked to state their expectations about the percent chance to obtain a permanent residence permit in Germany, obtain a secure job in Germany, and their expected monthly earnings. These expectations were elicited under the case of: no extra education (baseline) undertaken by respondent, and after obtaining a B1 language level proficiency. Expectations were also elicited for additional investments: obtaining a B2 language level proficiency, a vocational training ("Ausbildung"), or a university degree. We focus in this analysis on B1-level, given its prominence in German legislation, integration course requirements, and job market preferences. The exact formulation of the question is presented in Appendix B. Figure 5.2 shows the distribution of the variables reporting the expected monthly earning, the percent chance to obtain a permanent

residence permit in Germany, and the percent chance to obtain a secure job in Germany, with and without the B1-level.



(a) Earnings

(b) Residence permit

(c) Secure job

Figure 5.2.: Smoothed probability distribution function of expected outcomes

There is a clear first-order stochastic dominance of the outcomes when the individual has a B1-level. The expected monthly increase in earnings is on average 253 Euros, a 29.4 percent increase in earnings from the baseline (without B1-level). Furthermore, 8 out of 10 respondents expect a strictly positive earnings increase.

Regarding the expectation to receive a permanent residence permit, respondents report on average a fairly low chance without B1-level (14.1). percent Obtaining a B1-level triples this probability to 40.6 percent. The picture is the same for the chance to obtain a secure job (from 16.9 percent to 45.1 percent), although the variance in the reported expectations is higher in this case. Thus, asylum seekers seem to expect a fairly significant return to language proficiency.

5.4. Regression analysis

This section analyses the effect of the aforementioned economic incentives on the language proficiency. A reduced form equation that describes the relation between both sets of variables

can be written as follows:

$$L_i = I_i'\alpha + X_i'\beta + u_i \tag{5.1}$$

where i is a subscript for an asylum seeker in the population of interest. L represents a measure of language proficiency. We will use alternatively the results of the two language tests described in subsection 5.3.2. I is a vector of economic incentives. It includes the difference between the individual-specific expected probability to obtain a permanent residence permit with a B1-level and the same probability without a B1-level. It also includes the same differences for the probability to obtain a secure job and for expected earnings. X is a vector of control variables that can affect both the economic incentives and the language level attained. As is common in the literature, we include gender, education, age, the number of months in Germany, and the square of months. These variables are, in turn, the most common determinants of language proficiency. They measure exposure and efficiency.

We exclude two observations that report a large decrease of income (larger than 400 Euros monthly) from acquiring a B1-level, as outliers. Furthermore, we reverted the scale of the language test so that higher values correspond to better performances.

The results of this exercise are summarized in Table 5.1. Columns (1) to (4) present the results for the paper-pencil test with different specifications, while Column (5) to (8) present the results for the conversation test. The measures of economic incentives are first included one by one, starting with the increase in the chance to obtain a permanent residence permit (columns (1) and (5)), followed by the chance to obtain a secure job (columns (2) and (6)), and the increase in earnings (columns (3) and (7)). Columns (4) and (8) include all economic incentives measures. Note that the earnings return to a B1-level is available only for a smaller sample of respondents, due to a higher prevalence of non-response.

The estimated coefficients for the control variables appear to all have the expected signs and magnitude. German language proficiency increases significantly with the respondent's education and the number of months since arrival but decreases with age. Women seem to have less language skills than men.

Turning to the expected return to language proficiency in terms of chance to obtain a permanent residency, column (1) and (5) show that on average an increase of 10 pp (0.5 standard deviation) increases the score of the paper-pencil test by 0.26 points (0.09 standard deviation) and the conversation grade by 0.09 points (0.06 standard deviation). The finding of this strong effect seems congruent with the German legal context which links language proficiency to the issuance of a permanent residence permit.

Regarding the expected return in terms of chance to obtain a secure job, the effect is noisily estimated and unstable across specifications. So is the effect of the earnings returns, which appears, surprisingly, negative and significant in Column (7) and (8).

There is a concern that unobserved characteristics, which affect both the measured economic incentives and the language proficiency, might bias the estimation. For example, respondents with a high innate ability might be more efficient at learning German but might also expect a higher return to do so. To mitigate this concern and assess the robustness of the above results,

Table 5.1.: Regression results

	Paper-pencil				Conversation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Perm. residence	0.026***			0.033***	0.009*			0.015**
	(0.007)			(0.011)	(0.005)			(0.006)
Secure job		0.007		-0.006		-0.003		-0.009
		(0.011)		(0.017)		(0.006)		(0.009)
Earnings			-0.001	-0.001			-0.001*	-0.001**
			(0.001)	(0.001)			(0.001)	(0.001)
Female	-0.920*	-1.054**	-0.449	-0.255	-0.370	-0.380	-0.178	-0.084
	(0.472)	(0.511)	(0.687)	(0.667)	(0.268)	(0.274)	(0.343)	(0.348)
Primary	-0.268	-0.268			0.715*	0.856**		
	(1.126)	(0.727)			(0.406)	(0.354)		
Lower Sec.	1.732	1.637**	2.127***	2.376***	1.614***	1.859***	0.974***	1.121***
	(1.133)	(0.778)	(0.624)	(0.616)	(0.406)	(0.407)	(0.337)	(0.339)
Upper sec.	1.860	1.781**	2.678***	2.714***	1.416***	1.670***	1.052***	1.167***
	(1.162)	(0.798)	(0.693)	(0.670)	(0.406)	(0.393)	(0.370)	(0.360)
Tertiary	1.640	1.564*	2.143***	2.285***	2.177***	2.427***	1.466***	1.595***
	(1.236)	(0.900)	(0.783)	(0.779)	(0.521)	(0.516)	(0.439)	(0.459)
Age	-0.049***	-0.042**	-0.026	-0.045*	-0.035***	-0.031***	-0.023*	-0.033**
	(0.018)	(0.020)	(0.026)	(0.025)	(0.009)	(0.010)	(0.013)	(0.013)
Months	0.318***	0.327***	0.309***	0.266**	0.129***	0.141***	0.102**	0.086*
	(0.075)	(0.080)	(0.101)	(0.104)	(0.038)	(0.042)	(0.049)	(0.048)
Months squared	-0.006***	-0.006***	-0.005**	-0.004*	-0.002**	-0.002**	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.949	1.134	0.260	0.660	0.323	0.134	1.126	1.415*
	(1.595)	(1.440)	(1.564)	(1.568)	(0.679)	(0.661)	(0.816)	(0.814)
Observations	120	119	81	81	116	115	78	78
Adjusted R^2	0.324	0.279	0.223	0.273	0.236	0.225	0.190	0.217

OLS coefficients shown. Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$

we include two further control variables. Respondents took part in two paper-pencil tests to measure fluid and crystalline intelligence. We include the measure of the crystalline intelligence test, as the measure is highly correlated (for details, see section 2.1). Furthermore, some asylum seekers arrived in Germany with some knowledge of the English language. This might have facilitated their acquisition of German, compared to otherwise similar asylum seekers who only spoke Arabic. Respondents were asked to rate their language skills in English on a Likert-scale. This measure of language skills in English appears positively correlated with those in German (correlation coefficient of 0.39 with the conversation grade). We include it as a control variable in equation 5.1.

Table 5.2.: Regression results including cognitive test and English skills

	Paper-pencil				Conversation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Perm. residence	0.021***			0.029***	0.008*			0.015***
	(0.007)			(0.010)	(0.004)			(0.005)
Secure job		-0.002		-0.003		-0.005		-0.006
		(0.012)		(0.015)		(0.006)		(0.007)
Earnings			-0.000	-0.001			-0.001	-0.001
			(0.001)	(0.001)			(0.001)	(0.001)
Observations	110	109	76	76	107	106	74	74
Adjusted R^2	0.421	0.389	0.363	0.404	0.360	0.359	0.408	0.440

OLS coefficients shown. Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$

Table 5.2 reports our main coefficients of interest in a similar format as above. The estimated coefficients are stable, which is reassuring. Only the increase in expected chance to obtain a residence permit appears to affect the language proficiency, at a similar magnitude to our previous specification. The remaining coefficients are small and statistically non-different from zero at conventional levels.

5.5. Discussion

Language acquisition is very important for migrants in general and asylum seekers in particular as it allows for integration into the host country. This study finds evidence that language acquisition of Syrian asylum seekers in Germany responds to economic incentives.

In the German context, issuance of a permanent residence permit is linked by law to the acquisition of certain language skills. The analysis shows that individuals who expect a higher chance to obtain a permanent residence permit from being proficient in German have a significantly higher language proficiency. An increase by 10 pp (0.5 standard deviation) of the expected return to language proficiency increases language proficiency by 0.06 to 0.09 standard deviation. This result remains stable after controlling for a measure of cognitive abilities and English language skills. We do not find similar effects for other incentives such as the chance to obtain a secure job

or expected earnings. This finding emphasizes the importance of host countries' policies for the integration of asylum seekers.

Although the sample is small, it gives interesting insights on an important question that was so far unanswered. This should be a motivation to collect additional data on individual expected returns to language proficiency on a greater scale. One limitation of the methodology is that incentives and actual investments are observed at the same time. It would be desirable to observe the economic incentives first and then investments with some time delay, given that individuals could rationalize their investments ex-post. This in turn bolsters the need for panel data to measure the causal effect more precisely.

6. From Asylum Seekers to Illegal Migrants: The Intention to Overstay of Afghan Asylum Seekers in Germany

6.1. Introduction

Between the years 2014 and 2016, Germany registered the highest number of asylum seekers in its history, nearly 1.1 million applications. As of 2019, more than 1.84 million asylum seekers were accounted for in the country. The top three sending countries were Syria, Afghanistan, and Iraq. Both the prospect for recognition and the length of the asylum procedure strongly depend on an applicant's country of origin. For example, of the total number of applications submitted by Syrian asylum seekers between 2014 and 2019, only 4 percent had been rejected in the initial application phase, in contrast 49 percent for Afghan asylum seekers were rejected.[1] Moreover, 96 percent of Syrians received a protection status as of 2019 for the final decisions, after initial and follow-up applications, whereas only 66 percent among Afghans received similar statuses. Thus, for some groups of asylum seekers, the outcome of an asylum procedure involves a great amount of uncertainty.

Asylum seekers with rejected asylum claims must then decide whether to leave the country, as they are legally obliged, or remain without the legal right to stay and face the risk of deportation. An increasing number of asylum seekers with a rejected application have remained in Germany in the past years for several reasons. Many asylum seekers would rather stay clandestinely rather than return to their country of origin or seek a new host country; while others cannot be deported because they do not have a passport and/or their country of origin or nationality has not been confirmed beyond doubt. In addition, there is often little interest on the part of the countries of origin in enabling the forced return of their citizens. Furthermore, deportation to countries with ongoing armed conflicts like Syria and Afghanistan has become a contentious political issue.[2]

Of those asylum seekers with a rejected application who stay, close to 80 percent obtain a rather precarious status referred to as "toleration" (*Duldung*) until their deportation is enforced or their toleration status renewed. This status does not grant an individual the right to stay for the long run but allows them to work legally and receive some social assistance to cover their basic needs.

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[1] In Germany asylum seeking applicants can file an initial application for asylum and if rejected file up to two subsequent follow-up requests on technical grounds.

[2] FAZ (2019) "SPD-Innenminister gegen Ausweitung von Abschiebungen", last accessed on October 15, 2020 at https://www.faz.net/aktuell/politik/inland/spd-innenminister-gegen-ausweitung-von-abschiebungen-16233710.html.

Importantly, those who manage to remain in the country may eventually have the chance to obtain the legal right to stay.

The aim of this chapter is to shed some light on the motives behind the decision of asylum seekers with [the possibility of] a rejected application to overstay. In particular, it highlights the importance of expectations with respect to differing legal status and their respective outcomes. For this purpose, we introduced a module on subjective expectations in the Survey on Migrants' Expectations (SME) study. The focus on Afghanistan is motivated by the fact that Afghan citizens represent the second largest group of asylum seekers in Germany and are the largest group of foreigners with a legal obligation to leave Germany.

The survey elicited subjective beliefs of Afghan asylum seekers about the chance of obtaining the right to stay in Germany (RtS) and the perceived risk of deportation. It included a Randomized Controlled Trial (RCT) that provided information about the actual proportion of deportation for the Afghan population in Germany to half of the sample. It also collected information on expected income depending on legal status, as well as expected access to social services (education, social assistance, health service) and the labour market. Finally, the survey elicited the intention to overstay under different hypothetical scenarios.

We find that Afghan asylum seekers, on average, believe that half of all Afghan asylum applicants are granted some form of protection. This is below the actual final decision proportion (66 percent); but is close to the proportion of positive decisions in the initial application phase. Respondents report, on average, 68 percent chance of obtaining the RtS when *their* current status expires. Importantly, the variance in this statistic is large, reflecting that beliefs are very heterogeneous in the population. In particular, beliefs differ significantly by the city of residence, with those in Munich holding the most pessimistic beliefs.

Afghan asylum seekers have upwardly biased beliefs about the risk of deportation. On average, they are 20 percentage points (pp) higher than the actual number. The control group expected this risk to increase in the coming years. The RCT aimed at finding out whether these beliefs would respond to information about the actual proportion of deportation. The experiment showed that providing information about the actual deportation proportion for Afghan asylum seekers had neither a sizable effect on deportation expectations nor on the intention to overstay.

On average, respondents stated a 64 percent chance to overstay, were they to be denied the RtS, indicating a relatively high intent in the population to overstay. Our empirical analysis suggests a strong association between intention and subjective beliefs about legal outcomes. In particular, there is a significant influence of the belief about the chance of becoming regularized, if one were to overstay, on the intention to overstay.

To further investigate this effect, the survey included a set of questions that exogenously varied the perceived chance of obtaining the RtS between three hypothetical values (very unlikely, medium, and very likely). This allows us to measure the effect of this variable on the intention to overstay while controlling for individual-specific unobserved characteristics. An increase of one-standard-deviation from the mean raises the intention to overstay by 10 pp. Furthermore, the option to be regularized explains more than 20 percent of the intention to stay for one half of the population. The elasticity of the decision to overstay differs significantly by the city of residence.

Asylum seekers residing in Munich are considerably less willing to overstay when the chance of obtaining the RtS decreases.

The rest of the chapter is organized as follows: section 6.2 gives a brief description of the context of asylum migration in Germany.[3] Section 6.3 describes subjective beliefs in the sample. Section 6.4 presents the results of the RCT. Section 6.5 describes intentions to overstay and the effect of the chance to be regularized on it. Finally, section 6.6 concludes the chapter with a discussion on the implications of the findings.

6.2. Context

This section provides a brief contextual description of asylum migration to Germany.[4] According to the German Federal Statistical Office, the number of asylum seekers living in Germany has tripled between 2013 and 2019 from around 615 thousand in 2013 to more than 1.84 million in 2019, with a peak of near 1.1 million registrations between 2014 and 2016. As of 2019, 214 thousand Afghans registered as asylum seekers, making Afghanistan the second highest source country, before Iraq (193 thousand) and after Syria (587 thousand). At the height of the asylum migrant crisis (between 2014 and 2016), about 150 thousand Afghans entered Germany.

As of 2019, 15 percent of all asylum seekers in Germany were granted a permanent status, 59 percent a temporary status, and 26 percent were still in a precarious status (pending application, pending appeal or rejected application - *ungesicherten Status*). The prospect of recognition strongly depends on the country of origin. Also as of 2019, 96 percent of asylum seekers from Syria received some form of protective status (with 3 percent receiving permanent protection), while only 1 percent were legally obliged to leave the country. In contrast, for asylum seekers from Afghanistan, 66 percent were given protection statuses (with 7.6 percent of those receiving a permanent status), while 12 percent were legally obliged to leave. Moreover, the proportion of asylum seekers with a complete secure status also varies across federal states, e.g. for Afghans as of 2019: Bavaria 68 percent, Hamburg 80 percent, Berlin 68 percent.[5] This spatial inequality has been linked to the political orientation of the ruling party, with federal states governed by the largest left-wing party (SPD) being less likely to deny an application (Schneider, Segadlo, and Leue, 2020). There is also considerable gender disparity, e.g., as of 2019, 59 percent of Afghan males received a positive decision compared to 81 percent of Afghan females. Whereas the decision on an asylum application (positive or negative) is taken at the federal level by the Federal Office for Migration and Refugees (*Bundesamt für Migration und Flüchtlinge*), the issuance of a toleration status and the enforcement of deportation orders fall mainly under the jurisdiction of federal states and lower level administrations.

Asylum seekers with a rejected application are required to leave within a maximum period of 30 days and may receive financial support if they decide to leave voluntarily. If they do not

[3] Please refer to section 2.2 for details on the sample characteristics.

[4] All sources for official statistics are collected in appendix C.1. Referenced numbers are calculated by the authors.

[5] Complete secure status is described as "Annerkant Shutzstatus" in DESTATIS and includes refugee, asylum, subsidiary protection and ban on deportation cases.

comply, they face the risk of deportation. In practice though, deportation is rarely enforced. For example, in 2019, only 391 of the nearly 25 thousand asylum seekers from Afghanistan with a legal obligation to leave Germany were returned to their home country, and 582 were sent to another European country under the Dublin-agreement. Additionally, 80 percent Afghans who are legally obliged to leave Germany benefit from a temporary suspension of deportation or toleration status (*vorübergehende Aussetzung der Abschiebung* or more simply *Duldung*). This (precarious) status is issued when obstacles to deportation exist. It is issued from a time period of a few days to a few months (usually not exceeding six months).[6] A toleration does not constitute a legal right to stay in Germany, has no guarantee of renewal and can be revoked if the initial circumstances for the Duldung issuance are no longer valid, i.e. the migrant obtains travel documents.

Except under special circumstances, foreigners who have held a toleration status for at least three months can work in Germany if they receive a job offer, can undertake a vocational course or study.[7] According to the Asylum Seekers Benefits Act (*Asylbewerberleistungsgesetz*), asylum seekers with a toleration status are entitled, during the first 15 months of their status, to receive some social assistance to cover basic needs (food, accommodation, heating, health care, household consumption goods).[8]

Circumstances under which a toleration status can be transformed into a legal (temporary) residence permit include: the completion of a qualified apprenticeship or study, or employment as a skilled worker for a two- to three-year uninterrupted period. Furthermore, in accordance with German migration law a foreigner with a toleration status may be granted a temporary residence permit for humanitarian reasons if they cannot leave the country for a longer period of time for reasons beyond their control. However, this usually requires that the foreigner holds a valid passport and has sufficiently integrated into the German society. This last condition is usually understood as showing proof of language proficiency and being able to provide for one's needs.

Within this context, the SME study included a section that was designed to understand the decision of Afghan asylum seekers to stay in Germany without the legal right to stay or exit to another country. Indeed, departure of Afghan citizens from Germany are not rare. It is estimated that over five thousand Afghans voluntarily left Germany in 2019, 1.7 thousand of which where the asylum seeker who had been denied protection. These numbers should be considered lower bounds, as migrant exits are not always registered. The survey elicited subjective expectations among Afghan migrants residing in three large German cities.

The elicited expectations can be divided into three categories: (i) subjective beliefs about population averages, (ii) subjective beliefs about individual outcomes if leaving or staying, and (iii) intention

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[6] Opposing obstacles to deportations include: the right to safeguard the marital and family life or the assertion of illness-related dangers caused by deportation. A deportation is also impossible for factual reasons if travel documents are missing, the destination country refuses admission or traffic routes are interrupted. The immigration authorities also have the possibility of a discretionary tolerance for urgent humanitarian issues, personal reasons, or significant public interest (e.g. immediately upcoming surgery or the completion of a school or training year).

[7] Jobs need to be approved by the Federal Employment Agency.

[8] This assistance is provided either in kind, if living in group housing, or as cash payment if living in private housing. After 15 months under a toleration status, the migrant is entitled to the same level of social assistance as any legal resident.

to overstay expressed as probabilistic measures. The main objective of the empirical analysis is to address three questions:

- What are the beliefs of Afghan migrants with respect to the outcome of asylum applications and other outcomes related to legal status?

- Are those beliefs malleable, in particular, the belief about the risk of deportation?

- What are the determinants of the intention to overstay? In particular, how important is the prospect of obtaining the RtS in the future?

This chapter is linked to research on the role of subjective expectations in economic decision, see section 3.3 for a complete review.

The findings in this chapter highlight the substantial differences in subjective beliefs across cities. Because these beliefs are important for the investment decisions of asylum seekers, cities where migrants expect a low chance of future regularization, such as Munich, might eventually have a lower absolute number of illegal migrants. However, these migrants might also acquire less skills.

6.3. Subjective beliefs

This section provides a description of beliefs with respect to the outcome of asylum applications and other outcomes related to legal status. The survey included questions which required respondents to give subjective probabilities as a number between zero and 100.

The module on subjective expectations included a training sub-section where respondents were trained on the concept of probability. For example, respondents were asked to state how many (out of 100 Afghans) they thought could speak Dari, the most common language spoken in Afghanistan. Then the interviewer was asked to help respondents rephrase the answer in the form of a probability[9] and a counter-probability.[10] The same exercise was repeated for the proportion of Afghan migrants to Europe who came to Germany, and the proportion of Afghan migrants who obtain the right to stay in Germany. The questions are complemented with visual aids to facilitate understanding.[11]

We elicited subjective expectations on the population and the individual outcome levels. At the population level, the survey elicited respondents' beliefs with respect to the proportion of Afghans who obtain the RtS in Germany and the proportion of Afghans who were deported in the last few years. Questions were phrased as follows:

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[9] The interviewer asked: (1) "So the percent chance that a person from Afghanistan can speak Dari is:... "

[10] The interviewer asked: (2) "It means that the percent chance that a person from Afghanistan cannot speak Dari is:... "

[11] The complete questionnaire is available under `https://www.dropbox.com/sh/fb8ytdovg0scboz/AADgwGi5AQ53lsRq68dEc8Sfa?dl=0`.

Q1. *Not all people from Afghanistan who come to Germany obtain the right to stay in Germany. Out of 100 persons from Afghanistan who arrived in Germany, how many do you think obtain the right to stay in Germany?*

Q2. *Out of 100 Afghans who arrived recently in Germany, how many do you think were deported (forcibly removed) and sent back to Afghanistan by the German authorities in the last past years?*

At the individual level, the survey elicited respondents' beliefs with respect to the chance of obtaining the RtS in Germany for the next three years, the chance of obtaining the RtS in three-year time conditional on first staying in Germany without the RtS, and the probability to be deported conditional on not obtaining the RtS. Specifically, respondents were presented with the following hypothetical situations:

Imagine that your current status expires.

Q3. *What do you think is the percent chance that you would obtain the legal right to stay in Germany for the next three years?*

Q4. *You are not given the right to stay in Germany. But you decide to stay in Germany for the next three years. What do you think is the percent chance that you would obtain the legal right to stay in Germany by the end of the three years?*

Q5. *You live in Germany, but you do not have the legal right to stay in Germany. What do you think is the percent chance that you would be sent back to Afghanistan within the following three years?*

In all cases, respondents had to give a probability between zero and 100.

The 3+3 year window was selected for three reasons. First, it provided a not-too-distant time-horizon within which one can form realistic expectations. Second, most protection statuses have a maximum validity of three years. Third, conversations with experts suggested that exit from a toleration status could be expected in a window of five to eight years.

Table 6.1 presents the average and standard deviation for each city as well as the total sample. On average, respondents expect that around 45 out of 100 Afghans who arrived in Germany receive the RtS. This average belief is closer to the official statistics, in 2019, of positive initial application decisions (51 percent) than that of final decisions (66 percent). There is significant variation across cities with respondents in Munich displaying more pessimistic beliefs. The standard deviations are large, which also suggests a significant variation between individual beliefs. The first quartile of the sample distribution expects a probability of 30, and the third 60, see Figure 6.1a.

With respect to their own chance of obtaining the RtS if the current status were to expire, respondents expect, on average, a 68 percent chance of this occurring. Thus, we see a 22 pp expectations difference between average individual and population averages. Once more, beliefs in Munich are the most pessimistic with a 14 to 17 pp difference between it and Hamburg and Berlin respectively. Moreover, the average belief in Munich (56 percent) is slightly higher than the proportion of asylum seekers with some protection in Bavaria in 2017 (51 percent), but is 12 pp below said

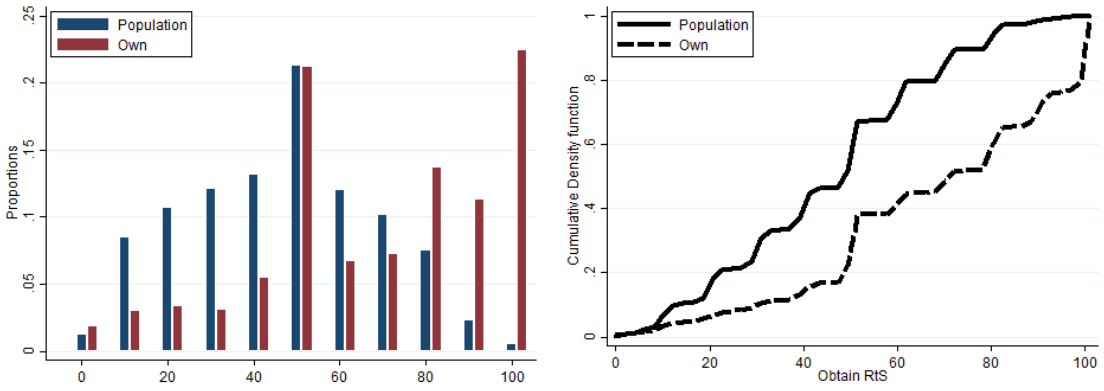
Table 6.1.: Subjective beliefs by city

	Berlin	Hamburg	Munich	Total sample
Obtain RtS. population (Q1)	46.61	53.94	35.29	45.29
	(21.21)	(19.13)	(22.55)	(22.11)
Deport. past population (Q2)	21.52	21.31	20.34	21.25
	(18.77)	(17.09)	(16.33)	(18.02)
Obtain RtS (Q3)	73.20	70.11	55.96	68.01
	(26.39)	(23.87)	(27.30)	(27.05)
Obt. RtS. after 3 yrs w/o RtS (Q4)	66.13	68.07	51.21	62.66
	(27.97)	(25.72)	(26.94)	(28.03)
Be deported if no RtS (Q5)	32.53	37.06	48.60	37.72
	(32.73)	(26.80)	(24.78)	(30.27)

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses.

average in 2019 (68 percent). The average belief in Berlin is above the 2019 official proportion (73 percent vs. 68 percent), and is below in Hamburg (70 percent vs. 80 percent). Standard deviations are also large here, suggesting significant variations between individual beliefs.

Average beliefs over the chance of obtaining the RtS, conditional on overstaying for three years, are slightly lower than beliefs over own chance of obtaining the RtS, if the current status were to expire (by 6 pp, on average). Suggesting that beliefs on the future of gaining the RtS, if overstay was necessary in the first time period, are high. Nevertheless, the same city patterns persist as with the elicited chance of obtaining the RtS, with those in Munich being rather more pessimistic.



(a) Histogram

(b) Conditional distribution functions (CDFs)

Figure 6.1.: Chance of obtaining the legal right to stay

Figure 6.1 compares the distribution of answers of Q1 and Q3 (population vs. own chance). Compared to the distribution of belief about the average population, the distribution of own chance is shifted to the right. This implies that a large proportion have higher expectation to obtain the RtS compared to others in the population. More interestingly, there is a large proportion

which state with certainty that they would obtain the RtS (around 21 percent report a 100% chance) whereas the population distribution at that level is close to zero.

Beliefs about the proportion of Afghans forcibly removed and sent back to Afghanistan and the chance to be deported when not obtaining the RtS are upwardly biased. On average, respondents believe that 21 percent of Afghans have been sent back to Afghanistan in the past few years, and that there is a 37.72 percent chance to be deported conditional on not obtaining the RtS. As discussed in section 6.2, deportation to Afghanistan is a rare event. In 2019, only 1.6 out of 100 Afghan asylum seekers with a rejected asylum application were deported.

Table 6.2.: Regression analyses of subjective beliefs

	RtS (pop.)	RtS now	Deport. (pop.)	Deport.
Female	9.28***	3.65**	5.43***	-2.71
	(1.40)	(1.79)	(1.36)	(2.05)
Years of education	-0.18	0.10	-0.15	-0.15
	(0.12)	(0.16)	(0.12)	(0.18)
Secure Status	6.42***	8.32***	-2.42*	-1.46
	(1.42)	(1.82)	(1.41)	(2.08)
Age	0.11*	0.15**	-0.11**	-0.29***
	(0.05)	(0.07)	(0.05)	(0.08)
Hamburg	14.80***	11.09***	-0.14	-10.16***
	(1.89)	(2.42)	(2.13)	(2.77)
Berlin	9.95***	16.27***	0.39	-15.82***
	(1.54)	(1.99)	(1.61)	(2.28)
Observations	1002	984	800	989
R^2	0.186	0.112	0.030	0.068

OLS coefficients shown. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The sub-sample for the regression "Deport.(pop)" exclude the observation for one interviewer who did not understand / follow the instructions; Munich is the reference city.

We, therefore, look at the drivers of these beliefs. Table 6.2 presents a linear regression of the beliefs on the individual characteristics: gender, years of education, legal status, age, and city of residence. Women are more optimistic than men about the chance of obtaining the RtS, which is consistent with the fact that, proportionally, more women obtain a protection status than men. Individuals with an already secure status are more optimistic, which also aligns with the nature of their status. Older individuals appear more optimistic about the chance of obtaining the RtS and less pessimistic about the risk of being deported. Moreover, the regression analysis confirms the importance of the city of residence on the beliefs held by the respondents.

Furthermore, the survey elicited beliefs about pecuniary and non-pecuniary outcomes in Germany, dependent on the individual's legal status. Table 6.3 presents the average expected monthly income with or without RtS.[12] With the RtS, respondents expect to earn, on average, 1,665 Euros

[12]The exact question was: "For each of the three situations, on average, what is the monthly income (including wage, government subsidies, etc.) that you expect you will have in the next 3 years (in Euros)? Situation 1: Legal right to stay in Germany, Situation 2: without legal right to stay in Germany. Situation 3: Outside Germany"

Table 6.3.: Subjective beliefs about further outcomes by city

	Berlin	Hamburg	Munich	Total sample
Income with RtS	1666.91	1727.51	1610.59	1665.06
	(745.5)	(565.9)	(519.2)	(653.7)
Income w/o RtS	1148.26	1383.08	1103.41	1191.28
	(647.5)	(486.8)	(534.1)	(590.3)
Decr. Acc. Educ.	0.51	0.71	0.59	0.57
	(0.500)	(0.453)	(0.492)	(0.495)
Decr. Acc. lab. mrkt.	0.53	0.68	0.73	0.62
	(0.500)	(0.466)	(0.445)	(0.487)
Decr. Acc. Soc. Ass.	0.82	0.85	0.85	0.83
	(0.383)	(0.358)	(0.360)	(0.372)
Decr. Acc. health	0.44	0.72	0.58	0.54
	(0.497)	(0.449)	(0.495)	(0.499)

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses. "Income with / and w/o RtS" average income expected in the three next years with the corresponding legal status. Distribution is trimmed at 95 percentile. "Decr. Acc." corresponds to a decrease of the perceived access from the current status to the situation w/o RtS in the corresponding domain.

per month. This amount is lowest in Munich (1,610 Euros), which also displays the lowest variance, and highest in Hamburg (1,727 Euros). Without RtS, respondents expect on average 1,191 Euros. Similarly, the average is lowest in Munich (1,103 Euros), and highest in Hamburg (1,383 Euros). These numbers imply an expected on average monthly return to legalization of 350 – 500 Euros, depending on the city. According to Brücker, Kosyakova, and Schuß (2020), the average monthly gross income of refugees who entered Germany between 2013 and 2016 was 1,863 Euros for those in a full-time occupation in 2018. The average elicited beliefs about income seem plausible as they represent between 54 percent and 89 percent of the average gross income of comparable German workforce, depending on the category considered.

Finally, the survey elicited beliefs on non-pecuniary benefits such as the (perceived) access to social services and the labour market in both the case of current legal status and in the case of becoming irregular (not obtaining the RtS). The perceived access is measured for four key dimensions (education, social assistance, health services and the labour market) by a four-point Likert-scale.[13] Table 6.3 shows the proportion of individual who expect a decrease of their access to social services, were they not to obtain the RtS in the next years. A decrease is most often expected in regard to access to social assistance (83 percent of respondents), followed by labour market (62 percent). These proportions vary noticeably between cities but have no clear ordering.

[13] Answers were: full access, somewhat limited access, very limited access, no access at all.

To conclude, we find important differences in beliefs not only along individuals, but also across cities. Beliefs about the proportion of Afghans who obtain the RtS are, on average, lower than official statistics; yet, respondents are optimistic about their own chance of obtaining the RtS. The beliefs about the prevalence of deportation are noticeably higher than actual rates. Finally, individuals perceive a clear return to obtaining the RtS, both in pecuniary terms as well as for some non-pecuniary aspects, namely through access to social services and the labour market.

6.4. Malleability of subjective beliefs about deportation

As previously discussed, respondents overstate the probability that they would be deported by German authorities. Therefore, we included an RCT to measure the effect of information, i.e. providing an official statistic on the actual deportation probability, on migrants' beliefs. Through the RCT we are then able to test how malleable beliefs are in the face of new information. The treatment group was informed of the proportion of Afghan migrants who had been deported from Germany to Afghanistan in the past few years. The control group received no information. Our interest lies in the difference that arises in beliefs, about the future rate of deportation as well as a respondent's own chance to be deported between the treatment and the control group.[14]

The RCT section followed the training section. Respondents were asked about their perception of the proportion of deportation in the last years (Q4). Afterwards, half of the respondents, randomly selected by the survey instrument were provided with information on the actual statistics of deportation for the Afghan population in Germany in the past 3 years. More precisely, the treated group received the following information:

I *There are official statistics about the number of Afghans that were deported from Germany to Afghanistan. From December 2016 to May 2019, in total 565 Afghan were deported from Germany by the German Authorities. This means about one Afghan out of 100 Afghans who arrived in Germany since 2016.*

Respondents who received information *I* were also asked if they found this statistic reliable.[15] We then elicited subjective expectations about the perceived proportion of deportation level for the entire population in the future. This question was asked to all respondents (both in the treated and untreated groups). Lastly, we elicited subjective expectations on own deportation probability, conditional on not obtaining the RtS, after a few questions. The flow-chart of the experiment can be found in Figure C.1 in Appendix C.2.

Table 6.4 presents the average treatment effect of the information treatment on beliefs of future deportation in the population as well as on own probability of deportation, conditional on not obtaining the RtS.[16] As a placebo, beliefs about past proportion of deportations are also displayed.

[14] A pre-analysis plan of the RCT has been registered under the AEA RCT registry (ID: AEARCTR-0004828) and can be found under the following link: `https://www.socialscienceregistry.org/trials/4828`.

[15] The answers were a binary yes/no.

[16] We exclude the observations related to one interviewer from whom it was found later during the fieldwork that he did not understand/follow the instructions of the RCT in Hamburg. N decreases in Munich as the treatment was introduced a few weeks after the beginning of the fieldwork.

This belief was elicited prior to the treatment and shows that the randomization worked reasonably well in each city. It also shows that these expectations are very high, 20 pp larger than the true value, in the population.

Table 6.4.: Treatment effects by city

	Treated	Non-treated	TE	p-value
Berlin (N=532)				
Deport.past (population)	20.80	22.51	-1.71	0.31
Deport.next 3 yrs (population)	19.24	27.25	-8.01	0.00
Be deported (if no RtS)	32.02	31.04	0.98	0.73
Stay w/o RtS	71.29	67.10	4.19	0.19
Hamburg (N=135)				
Deport.past (population)	20.62	22.21	-1.59	0.60
Deport.next 3 yrs (population)	27.65	23.35	4.30	0.34
Be deported (if no RtS)	30.97	28.78	2.19	0.65
Stay w/o RtS	66.36	61.73	4.63	0.39
Munich (N=162)				
Deport.past (population)	21.52	18.65	2.87	0.26
Deport.next 3 yrs (population)	19.33	29.88	-10.55	0.00
Be deported (if no RtS)	43.89	47.21	-3.32	0.42
Stay w/o RtS	53.34	52.60	0.75	0.88

Note: P-value calculated for a t-test on the non-missing values.

The results of the experiment imply that there may be some movement beliefs regarding the population but not on the individual level. In the control group, expectations about future deportations are high. Respondents in Hamburg expect an increase in the rate of deportation in the next few years. Receiving the information treatment leads to a decrease in expected number of deported in the future in Berlin and Munich, -8pp and -11pp respectively. However, these expectations remain rather high, in comparison to official statistics (less than 1 percent). In Hamburg, where the lowest probabilities in the control group are given, the information treatment does not seem to affect average beliefs. If anything, it suggests a confirmation bias. Non-parametric equality of median tests and regressions controlling for individual characteristics and interviewer fixed effects yield qualitatively similar results.

A limitation of the above results is that the measured effects could be a result of an "enumerator demand effect". That is respondents provided lower answer because the interviewer corrected them a few seconds before. However, expectations about one's own deportation are elicited a few minutes after the provision of information and should not suffer from this bias. Furthermore, we find that intention to overstay (see next section) is slightly higher in the treatment group, but the difference is not statistically significant. All in all, elicited expectations do not differ between treatment and control group on the individual level. Therefore, it seems that the information has only limited importance for individual beliefs. Appendix C.3 provides additional evidence of this finding by calculating the importance of the provided information in a Bayesian-updating model.

In summary, beliefs about the risk of deportation are upwardly biased in the population and do not seem to respond to the provision of official statistics.[17]

6.5. Intention to stay

In this section we focus on the last question posed in this study, what are the determinants of the intention to overstay in Germany. We investigate its relation with subjective beliefs about the chance of obtaining the RtS in the future, the perceived chance of deportation and the outcomes in the presence of no RtS.

The survey elicited the intention to overstay in Germany with the following questions:

Q6 *How many more years would you like to stay in Germany?*

Q7 *What do you think is the percent chance that you would stay in Germany for the next 3 years?*

Q8 *Imagine that your current status expired. You are not given the right to stay in Germany for the next 3 years. What do you think is the percent chance that you would decide to stay in Germany for the next 3 years?*

6.5.1. Descriptive statistics

Around three quarters of the respondents reported that they would like to stay forever in Germany. Of the remaining quarter, 57 percent would like to stay until conditions in the home country improve, 9 percent would stay less than 10 years, and 17 percent for 10 to 30 years. The distribution is very similar across the three cities. Hence, we find that the willingness to stay in Germany for a long time is rather high for $Q6$.

Turning our attention to the distributions of $Q7$ and $Q8$ we find a corresponding picture. Table 6.5 presents the average for the whole sample, and by city, for the answers to $Q7$ and $Q8$; while Figure 6.2 presents conditional density functions (CDF) of $Q7$ and $Q8$ by city.

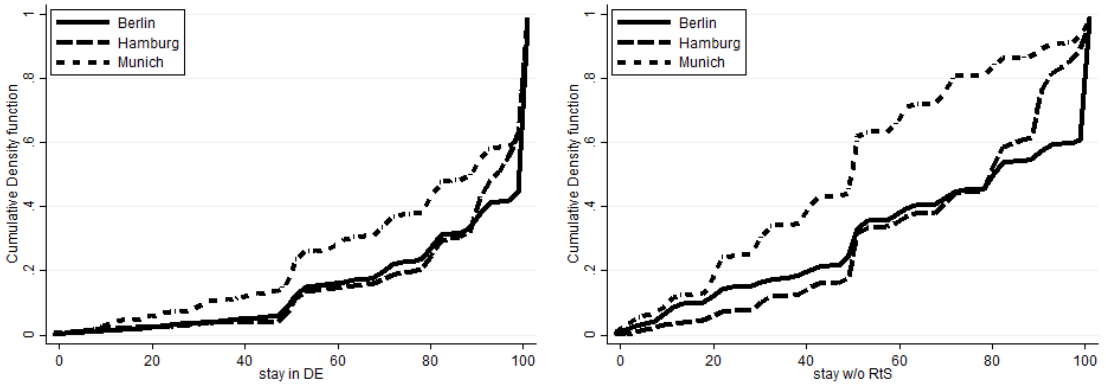
The reported chance of staying in Germany for the next three years is high, with a mean of 83.07 percent chance. A large proportion of the population (46.9 percent) reports a 100 percent chance to stay in the next three years. The average chance is lowest in Munich, 76.17 percent. Indeed, the CDF of Munich is first-order stochastically dominated by the two other cities. Consequently, respondents in Munich are the most pessimistic about their chance to stay. This is consistent with their more pessimistic beliefs about the chance of obtaining the RtS and the chance to be deported if not obtaining the RtS.

[17] The question about trust in the information does not seem to convey meaningful information. Whether an individual states that he trusts the information or not appears uncorrelated with the difference between the stated belief about past and future deportation rates.

Table 6.5.: Intention to stay in DE by city (I)

	Berlin	Hamburg	Munich	Total sample
Stay in DE (Q7)	85.51	85.38	76.17	83.07
	(22.66)	(21.32)	(27.76)	(24.12)
Stay w/o RtS (Q8)	69.75	69.90	48.73	64.36
	(32.59)	(26.29)	(28.33)	(31.53)

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses.



(a) Stay ($Q7$) (b) Stay w/o RtS ($Q8$)

Figure 6.2.: CDFs of intention to stay and intention to stay conditional on not receiving the RtS by city

The intention to stay without RtS is 19 pp lower than the unconditional probability of the intent to stay. Fewer respondents state a 100 percent chance to stay (24.72 percent), of which 80 percent live in Berlin. Once again, Munich's CDF is markedly dominated by the CDFs of the two other cities. The difference between the averages is about 21 pp. Nearly 40 percent of residents in Berlin report a 100 percent chance to stay in the case of receiving no RtS.

Moreover, theoretically, the chance to stay in Germany is an unconditional question which includes both the chance of obtaining a permit, the intention to stay with and without the RtS, and the chance to be deported if denied the RtS. To that end we are also able to examine if respondents are Bayesian consistent. Bayes' rule establishes that:

$$\begin{aligned} P(\text{Stay in DE}) \quad = \quad & P(\text{obtain RtS}) * P(\text{Stay with RtS}) \\ & +(1 - P(\text{Obtain RTS})) * (P(\text{stay w/o RtS}) * (1 - P(\text{Deportation})). \end{aligned} \tag{6.1}$$

Therefore, assuming that $P(\text{Stay with RtS}) = 1$, we use equation 6.1 and the answers provided for each element to calculate the implied probability to stay using Bayes' Rule. We find that people are not fully Bayesian in their answers. Respondents express a higher chance to stay when asked directly than implied by their answers on the probability obtaining the RtS and deportation

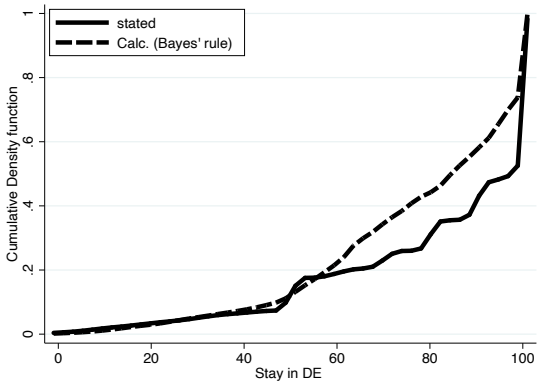


Figure 6.3.: Chance to stay: stated and calculated by Bayes' rule

likelihoods. Indeed, we find that more people express high or absolute certitude (see Figure 6.3) compared to the Bayesian implication. However, averages are not too dissimilar with the main patterns discussed above consistent across the two measures.

Of interest is that reported alternative destinations, should one decide to exit Germany, are very diverse. The top three countries mentioned are France (14 percent), Canada (11 percent) and the United Kingdom (8 percent). 40 percent of respondents mentioned a European country other than Germany, while only 7 percent identified returning to Afghanistan.

6.5.2. Determinants of the intention to stay without the right to stay

In looking at the determinants of the intention to overstay without the RtS we look at three aspects, namely:

(i) individual characteristics: gender, skill level, age, legal status, time since arrival in the EU and city of residence;

(ii) subjective beliefs about legal status and deportation: chance of obtaining the RtS if staying for three years without the RtS, chance to be deported conditional on not obtaining the RtS;

(iii) expected outcomes in Germany: monthly expected income without the RtS, and the wage return from obtaining a legal status – that is the difference between the income with the RtS and the income without the RtS – as well as indicators of the perceived access to social service without the RtS.[18]

Table 6.6 displays the result of two specifications, where the control variables are introduced progressively. We estimate the relation by first using an ordinary least squares (OLS) specification

[18]Each indicator variable is equal to one if the individual expect a full access or a somewhat limited access and zero otherwise.

and then a least absolute deviation (LAD) specification. We utilize the second specification in order to address a limitation of OLS regarding extreme values.

The first specification (OLS(1) and OLS(2)) is a linear regression of the stated chance of stay without RtS on the control variables. In this specification, gender, legal status security and the city of residence of the respondent are the main individual characteristics explaining the intention to stay. Women have higher intention to stay (4 to 5 pp), while respondents with a precarious legal status have on average a 6 pp lower intention to stay. The effect of the city of residence is sizable even when controlling for other individual characteristics and subjective beliefs. In comparison to Munich, those in Berlin and Hamburg have significantly higher intention to overstay. Significant results, for the most part, hold across specifications.[19]

The perceived chance of obtaining the RtS if one overstays has a statistically and economically significant effect on intention to overstay. A one-point increase in the belief of obtaining the RtS increases the intention of overstaying by 0.44 pp. That is, a one-standard-deviation increase (+28.4 pp) from the mean increases intention to stay by 12.51 pp ($=28.44 \times 0.44$). Subjective beliefs about deportation have a weaker effect. A one-standard-deviation increase (+30.5 pp) from the mean decreases intention to overstay by 2.44 pp.

Expectations about income in Germany without RtS have a statistically and economically significant effect on intention to overstay. A 100 Euro (0.16 sd) increase from the mean of expected income increases the intention to overstay by 0.49 pp. However, income returns to regularization have a weaker effect. Perceived access to health services seems to be an important determinant of the decision to stay without the RtS. Those who expect a full or somewhat limited access to health care are more willing to overstay (by 5.9 points).

The second specification is a least-absolute deviation estimation of the log-odds of the chance to stay without RtS on the same control variables in the OLS specification (LAD (1) and LAD (2) in Table 6.6). As argued by Blass, Lach, and Manski (2010), this specification is more robust to extreme observations (0 and 100) and rounding.[20] The coefficients are exponentiated to ease interpretation as they yield the change in odds ratio. For example, the last column (LAD (2)) suggests that women have 52 percent (1.52 -1) higher odds of staying than men, whereas respondents with a secure legal status have 51 percent (1.51 -1) higher odds of staying than their counterparts with a precarious legal status. Furthermore, a one-point increase in the perceived chance of obtaining the RtS, if one overstays, increases the odds by 4 percent. In this specification, the Hamburg indicator is no longer significantly different from zero after inclusion of subjective beliefs, although its magnitude is relatively large. Berlin maintains its significance albeit at a lower significance level.

The conclusions of both specifications are similar and point to the importance of subjective beliefs in the decision to overstay. In particular, they stress the importance of perceived chance of becoming regularized in the future. We have interpreted the above results as causal effects for ease of exposition. However, there may exist unobservable characteristics influencing both the intention to overstay and individual subjective beliefs, e.g., individual traits, or private information, as

[19]Hamburg loses significance in the LAD(2) specification with controls.
[20]Extreme values are replaced with slightly larger/lower ones: 0 by 0.1 and 100 by 99.9.

Table 6.6.: Regression analyses of intention to stay w/o RtS

	OLS (1)	OLS (2)	LAD (1)	LAD (2)
Female=1	4.60**	4.23**	1.40*	1.52***
	(2.06)	(1.97)	(0.28)	(0.19)
Low-skilled	-1.91	-1.35	0.84	0.85
	(1.98)	(1.93)	(0.15)	(0.12)
Age	0.18**	0.03	1.01*	1.01*
	(0.08)	(0.07)	(0.01)	(0.00)
Secure status	6.42***	5.87***	1.62***	1.51***
	(2.15)	(2.08)	(0.26)	(0.21)
Years since arrival	-1.68**	-1.00	0.82*	0.90*
	(0.81)	(0.82)	(0.09)	(0.06)
Hamburg	18.15***	10.45***	3.93***	1.11
	(2.57)	(2.43)	(0.63)	(0.13)
Berlin	19.97***	11.08***	5.06***	1.69**
	(2.30)	(2.52)	(1.73)	(0.43)
Obt. RtS. after 3 yrs w/o RtS (Q4)		0.44***		1.04***
		(0.04)		(0.00)
Be deported if no RtS (Q5)		-0.08**		0.99***
		(0.04)		(0.00)
Income w/o RtS (in 100 EUR)		0.49***		1.06***
		(0.16)		(0.01)
Wage return to legal status (in 100 EUR)		0.27		1.03*
		(0.20)		(0.02)
Acc. educ. (w/o RtS)=1		0.30		1.06
		(1.93)		(0.12)
Acc. lab. market (w/o RtS)=1		2.19		1.03
		(2.09)		(0.13)
Acc. soc. ass. (w/o RtS)=1		-1.16		0.92
		(2.04)		(0.12)
Acc. health (w/o RtS)=1		5.94***		1.37**
		(2.22)		(0.20)
Constant	46.17***	18.08***	0.92	0.08***
	(4.26)	(5.61)	(0.46)	(0.03)
Observations	980	826	980	826
R^2	0.114	0.317		

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Coefficients of LAD(1) and LAD(2) in exponentiated form.

suggested by Wiswall and Zafar (2015). Thus, it is more accurate to talk about association between variables.

The next section further investigates the effect of the expected chance of obtaining the RtS on the intention to overstay by exploiting within-individual variations; hence allowing us to interpret causal effects.

6.5.3. Causal effects

To gauge the effect of the expected chance of obtaining the RtS on the intention to overstay, the respondents were presented with hypothetical scenarios about the chance of regularization. The survey includes the following questions:

Q9, Q10, Q11. *Imagine that your current status expired. You are not given the right to stay in Germany, but if you stay you will obtain with q% chance the right to stay in Germany at the end of the 3 years. What do you think is the percent chance that you would then decide to stay in Germany for the next 3 years?*

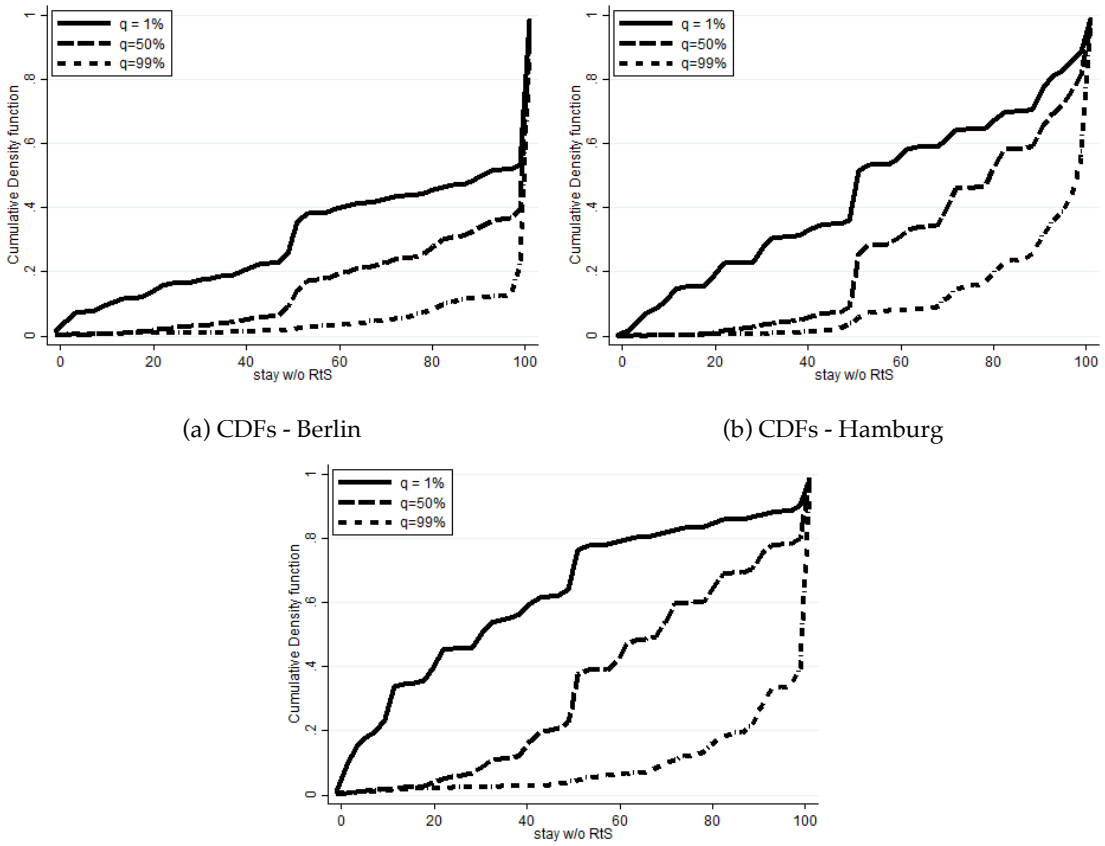
The parameter q was varied to take value 1, 50 and 99. All respondents received all three questions. The order of question was randomly assigned by the survey instrument.

Table 6.7.: Intention to stay in DE by city (II)

	Berlin	Hamburg	Munich	Total sample
stay if q=1 (Q9)	70.04	56.02	37.07	58.61
	(35.05)	(32.83)	(32.35)	(36.47)
stay if q=50 (Q10)	85.55	74.55	66.46	78.14
	(22.96)	(22.36)	(25.88)	(24.97)
stay if q=99 (Q11)	95.80	89.94	91.02	93.26
	(13.55)	(16.12)	(18.15)	(15.64)

Notes: Mean values calculated on non-missing observations. Berlin N=534, Hamburg N=226, Munich N=264, Total N= 1,024. Standard deviation in parentheses.

Table 6.7 presents the averages of answers to questions $Q9$ to $Q11$ for the whole sample and by city. Figure 6.4 represents the CDFs of these three questions by city. Intention to overstay is very large when $q = 99$, the given average is 93.26 percent chance. The CDFs in this case are highly skewed to the right, where 68 percent of the sample answer 100, and close to 90 percent gave answers between 75% or above. This pattern is very consistent across all cities. Berlin has the highest proportion of "100%" answers. The average intention to overstay drops by about 15 pp when $q = 50$. The magnitude of this change depends strongly on the city: Berlin -10 pp, Hamburg -15 pp and Munich -25 pp. While the distribution is more spread for $q = 50$, still 42 percent of the sample answered 100, and close to 90 percent give answers of 45% or above. Even when $q = 1\%$, 30 percent of the sample answered 100%. Of those, 80% reside in Berlin. The drop in the average intention to overstay from the case where $q = 99$ is on average 35 pp. Again, the magnitude of this change differs strongly by city: Berlin -26 pp, Hamburg -34 pp and Munich -54 pp. Hence,



(a) CDFs - Berlin

(b) CDFs - Hamburg

(c) CDFs - Munich

Figure 6.4.: Intention to stay w/o RtS by city for $q = 1, 50, 99$

we see that Munich residents appear less willing to stay when there is almost no chance to be regularized. The difference in intention to overstay between Berlin and Munich is about 33 pp. Hence, the chance of obtaining the RtS three years ahead appears to have a significant effect on the intention to stay without RtS.

We create a "pseudo-panel" by eliciting these subjective expectations under several hypothetical scenarios. We observe for each individual a vector: $((1, p_i(1)), (50, p_i(50)), (99, p_i(99)), (q_i, p_i(Q_i)))$, where $p_i(q)$ denotes the intention to stay without the RtS when the chance of obtaining the RtS three years ahead is q.[21] To calculate the elasticity of interest, we use fixed-effects methodologies to purge the bias from individual-specific unobserved characteristics. We, therefore, estimate the following models:

$$\begin{aligned} p_i(q) &= \beta q + \tau_i + u_{iq},\ q = 1, 50, 90, Q_i \text{ (Linear FE)} \\ \log\left(\frac{p_i(q)}{1 - p_i(q)}\right) &= \beta q + \tau_i + u_{iq},\ q = 1, 50, 90, Q_i \text{ (LAD FE)} \end{aligned}$$

The first specification (Linear FE) uses the elicited intention to overstay as the dependent variable, whereas the second specification (LAD FE) uses a log-odd transformation of it. τ_i represents

[21] Q_i corresponds to the answer to $Q5$, and $p_i(Q_i)$ to the answer to question $Q8$.

individual fixed-effect that captures observed and individual specific characteristics, and u_{iq} is a measurement error. Regressions are conducted for each city as well as the entire sample.

Table 6.8.: Regression of intention to stay without RtS

	Berlin	Hamburg	Munich	All
Linear FE				
Obt. RtS. after 3 yrs w/o RtS	0.27***	0.33***	0.52***	0.35***
	(0.01)	(0.02)	(0.02)	(0.01)
LAD FE				
Obt. RtS. after 3 yrs w/o RtS	1.02***	1.02***	1.05***	1.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	2023	898	1013	3934

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Coefficients of LAD FE in exponential form. LAD FE for Berlin presents the results of a quantile regression at the first quartile instead of the median.

Table 6.8 presents the estimates of the coefficient β. Due to the larger presence of extreme value observations, the LAD FE does not converge for the Berlin sub-sample. Instead, we present the result for a quantile regression at the first quartile.

The linear FE estimation implies that a one-point increase in the perceived chance of obtaining the RtS increases the intention to overstay by 0.35 pp. That is, a one-standard-deviation increase from the mean raises the intention to overstay by 9.95 pp (=28.44×0.35). This effect is stronger in Munich than in the other cities. The same increase from the mean raises intention to overstay by 14.78 pp, against 9.39 pp in Hamburg and 7.68 pp in Berlin. Similarly, the LAD FE estimation implies double the increase of the odds of overstaying in Munich as in the two other cities.

We can further measure the importance of the chance of obtaining the RtS by the option-value ratio:

$$\rho_i = \frac{\hat{p}_i(Q_i) - \hat{p}_i(0)}{\hat{p}_i(Q_i)} \tag{6.2}$$

where $\hat{p}_i(Q_i) = \hat{\beta} Q_i + \tau_i$. Here, ρ measures the increase in the intention to overstay that is due to the chance of obtaining the RtS in the future. The larger ρ_i, the more the intention to overstay is driven by the option to be regularized.

Figure 6.5 presents a box plot of the distribution of ρ in the population, by city. We see that the option of regularization drives a sizable part of the intention to overstay. The interquartile interval ranges from 0.12 to 0.22 for Berlin, that is, the option to be regularized explains 12 percent to 22 percent of the intention to overstay, of the middle half of the population in this city. This interval is $[0.21, 0.31]$ for Hamburg, and $[0.27; 0.49]$ for Munich. In Munich, the option to be regularized explains half of the intention to overstay for one quarter of the population. These findings illustrate the importance of the perceived chance of obtaining the legal right to stay on the ultimate decision to overstay.

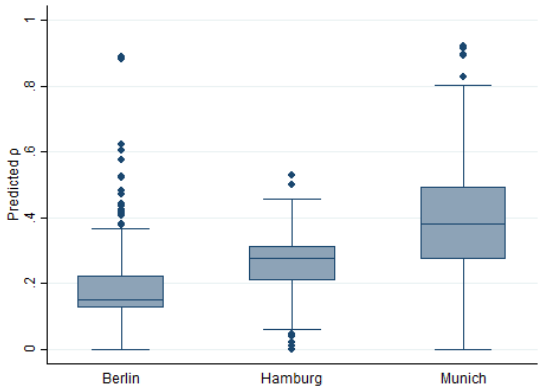


Figure 6.5.: Box plot ρ by city

6.6. Discussion

In summary, we find that Afghan asylum seekers are, on average, pessimistic about the proportion of asylum seekers that are granted the refugee status in Germany compared to actual national statistics. However, they are optimistic about their individual chances. There is considerable heterogeneity in individual subjective beliefs. In particular, beliefs differ greatly by the city of residence. Moreover, Afghan asylum seekers have upwardly biased expectations about the risk of deportation. Providing information about the actual proportion of deportation does not have a sizable effect on those beliefs.

In turn, subjective beliefs shape the intention to stay in Germany without the RtS. The intentions to overstay are, on average, relatively high. The possibility of regularization in the future explains more than 20 percent of these intentions for one half of the population. Here, as before, the elasticity of the intention to overstay to the perceived chance of being regularized differ significantly by the city of residence. Asylum seekers residing in Munich are considerably less willing to overstay when the chance of obtaining the legal right to stay decreases.

To pinpoint the origin of this discrepancy across cities is beyond the scope of our study. Possible reasons might include selection of migrants into cities, different information in the network, and/or factors related to local government.

However, it is unlikely that selection of migrants on individual characteristics could explain completely these findings. First, the initial distribution of asylum seekers is, more or less, randomized across federal states, especially in the case of countries of origin with large number of asylum seekers, such as in the case of Afghanistan. Second, the city-effect is sizable even when controlling for a large set of observable characteristics. Moreover, different information might circulate in the network at the city level, and thus further research should be done to elicit source, content, and transmission of information within local networks.

In our opinion, the political positioning of the local governments with respect to migration issues might also be an important factor explaining the city differences in subjective beliefs and intention

to overstay. At the time of the survey, the parliament of Bavaria was governed by a centre-right party (CSU). This party has advocated a harder line on migration. It had been openly critical of the political decision of the federal government during the so-called refugee-crisis of 2014 and 2015 and campaigned for an upper limit of 200 thousand asylum seekers per year. Bavaria is one of the two states (the other being Saxony) that regularly deports people to Afghanistan who are neither Islamist threats nor criminals.[22] It is not unlikely that this positioning has created more pessimism among asylum seekers about their future prospect of regularization and stay. If so, our results suggest that deterrence policies might reduce the intention to overstay.

However, one should keep in mind that deterrence policies might also have unintended consequences, for example on integration investments of asylum seekers. A precarious legal status creates institutional barriers for a migrant's integration in the host society. For example, it increases local firms' cost of hiring by creating uncertainty about the length of a work contract. Furthermore, economic literature has pointed out the importance of subjective expectations on human capital investments in several domains. In particular, the prospect of staying in a host country is often cited as a key determinant of language acquisition in migrants: the more likely the stay, the higher the returns of the host country language, and therefore, the higher the investments, see Chiswick and Miller (2015) and chapter 5.

We suggest that dampened prospects for acquiring the RtS might lead to an under-investment in German language in Munich compared to the other two cities. A standard mediation analysis illustrates this point clearly. The independent variable, or treatment, is the residence status (equals 1 if residing in Munich, and 0 otherwise). The dependent variable is the language level of the asylum seeker, as assessed by the interviewer at the end of a short conversation in German about the weather. Respondents with higher test scores showed better German language proficiency. The mediator, in this analysis, is the prospect of obtaining the RtS ($Q4$). We control for gender, number of years of education, age and age squared, current legal status and number of months in Germany/EU. These aspects have all been identified in the literature as influencing language skills (Adserà and Pytliková, 2015; Chiswick and Miller, 2015). We also include the estimated residual term u_i from equation (6.2) to mitigate concerns about unobserved characteristics, that would influence treatment, mediator and dependent variable, in the regressions. Details of the intermediate regression are collected in appendix C.4.

Table 6.9.: Results of the mediation analysis

Effect	Mean	[95% Conf.	Interval]
Total Effect	-0.41	-0.59	-0.23
ACME	-0.06	-0.11	-0.01
Direct Effect	-0.35	-0.52	-0.16
% of Tot Eff mediated	0.15	0.10	0.27

Table 6.9 displays the results of the mediation analysis. We find that the total effect is significantly negative (-0.41) and economically sizable (0.30 sd of the language score). This suggests that respondents in Munich have, on average, poorer language skills than their counterparts in Berlin

[22] See for example: Spiegel (2017), last accessed on October 15, 2020 "Obergrenze! Obergrenze?" `https://www.spiegel.de/politik/deutschland/csu-wahlprogramm-bayernplan-ein-bisschen-obergrenze-a-1158350.html`.

and Hamburg. The total effect can be decomposed in the mediated effect (-0.06) attributable to lower average beliefs in Munich and the direct effect (-0.35), attributable to other factors at the city level, e.g., differential access to German language class. Therefore, as much as 15 percent of the language skill gap between Munich and the other two cities can be explained by lower prospects of regularization in Munich.

These results put into perspective the consequences of a political strategy of deterrence (*Abschreckung*), which aims at decreasing future opportunities for acquiring a legal right to stay to avoid creating so-called pull-effects. Intention to overstay of those already present are relatively high. Given that deportation rates are low, it is likely that a large part of asylum seekers will remain in Germany, irrespective of their status. However, a precarious legal status creates institutional barriers for their integration. Moreover, the low prospects of regularization might deter them *ex ante* from human capital investments that are key for their integration. In sum, although a deterrence strategy might lead to a slightly lower number of illegal stayers; these stayers would in turn attain less skills.

7. Over-optimism and Job-market Access in Asylum Seekers in Germany

7.1. Introduction

With the 2014 / 2015 wave of refugees in Europe the topic of "access" to the labour market for asylum seekers has become prominent in both public and academic debates. Indeed, Germany has been lauded as one of the European countries that has worked hard to allow early access to the labour market for these migrants; with the argument that early access allows for faster and smoother integration (Münz, 2017; OECD, 2016). However, there is also an assumption that, similar to other migrants, asylums seekers arrive in developed countries with over-optimistic views of what their access to the labour and other markets would be. These over-optimistic views are thought to be a result of misinformation on the institutions in the new host country. This leads to asylum seekers setting incorrect beliefs, before arrival in the host country, on access to and potential outcomes in different markets (Braga, 2007; Massey, 2006; Sayad, 2004). The main channel often cited as a base for this incorrect belief setting, is information received from the network present in the destination country before migration (Fokkema and de Haas, 2015; Laczko et al., 2016; McKenzie and Rapoport, 2007). In the case of asylum seekers this misspecification could exist to a greater extent given the presence of "herd migration" behaviour as articulated by Epstein and Gang (2006). Meaning that "people are thought to migrate where they have observed others go, with the assumption that those before had information on the destination and had made an informed decision". Therefore, it is important to examine the concept of misspecified beliefs on market access as a large part of current debate on refugees centres on how this misinformation in turn affects the decision to migrate to and subsequent investment in particular host country human capital, i.e. out of the set of possible countries to seek asylum in.

In this chapter, I specifically look at changes to beliefs of access on the labour market. The labour market is often stated as key in the decision process to move to a particular host country and is essential in the successful integration of migrants (Bodvarsson and Van den Berg, 2013). I ask two fundamental questions that are, surprisingly, missing in evidence in the current discourse: 1) is there a gap in perception of access to the labour market upon arrival for asylum seekers in their chosen host country, and if so, how large is the belief updating; 2) what effect does this updating of beliefs actually have on actual labour market outcomes?

Interestingly, although the concept of market access is often used, it is not so readily defined. Access in public discussions mainly refers to the legal ability for entry into the market, e.g. through being given the legal right to work. Yet, access from an economic perspective is a combination of both the legal right to do so, the human capital supplied as well as the market demand for it.

These in turn determine not only the ability to enter the job market but also the level of attachment (Farías and Savilla, 2015).

Individuals make an ultimate decision to apply to work on their belief of how well they fit the demand based on their information set of these aspects. The belief on access is, therein, composed of separate beliefs on what is demanded for each job position and how well one's own human capital fits said demand. Congruently, in the case of asylum seekers, the decision to migrate to a particular country has little to do with the *actual* ability for a person to take part in the labour market, and more to do with their *belief* on their ability to do so. Yet, as beliefs are based on an information set that may be faulty or incomplete, inaccurate beliefs on actual market access may arise. This misperception leads to over/under-optimism in access (entry) abilities of an individual which can be updated after gaining information about the actual market through continued market interaction (e.g. belief updating) (Conlon et al., 2018).

I follow literature on expectation setting in order to measure updating of beliefs given new information on market realities. It decomposes market performance as a construct of two aspects: the person's actual abilities and composition (capital), and the person's own belief of how this capital will be received in the market. The process of belief updating lies in the latter. Upon receiving new information individuals upgrade or downgrade their beliefs to align with the realities observed. A "pessimistic" individual is one who had a priori lower beliefs of access than the reality; whereas, an "optimistic" individual had a priori higher beliefs than reality.

I am able to measure an individual's belief of access to the labour market with the data collected in the Survey on Migrants Expectations (SME) study. This study was conducted in 2019 in three cities in Germany, hosting the largest populations of Afghan nationals. The survey included demographic, integration, and subjective expectation questions on various institutions in Germany, including the labour market. In it 1024 respondents were asked to choose, from a four-point Likert scale ranging from no access to full access, what they believed their access level to particular markets in Germany would be at arrival and what they believe it is currently (at time of interview). The data allows me to easily identify those individuals who upgraded/downgraded their belief over time and those who did not.

I take the process of updating beliefs for an individual as the difference between the information on access to the labour market at arrival and at time of interview. The main concern in this study is to calculate the loss/gain in employment outcome as a consequence of belief misspecification. That is the level difference in employment and type of employment between the case of those who updated their beliefs after arrival in comparison to those who had correct beliefs about the labour market. In order to retrieve this quantity, I model the presence of belief updating as the difference between ex ante and ex post beliefs on labour market access. In doing so, I define three groups, those who revised their beliefs upwards, those who revised their beliefs downwards, and those who did not revise their beliefs. In the first case, an individual was too pessimistic about the market at arrival and in the second too optimistic. I calculate the individual effects of the first two groups holding the third constant, controlling on other key elements affecting access to the labour market. In this way I am able to calculate the effects of updating given the presence of misinformation.

I find that there is a somewhat similar number of individuals who overestimated their access to the labour market as those who underestimated it. This result implies that a majority of individuals who came to Germany from this subsample of refugees do not seem to have overoptimistic expectations. In calculating the effects of belief updating, I find that there is a systematic and significant negative effect on employment outcomes (entry and attachment) in the case of a negative updating to beliefs. However, I do not find a significant positive effect from positive updating on employment outcomes.

I postulate that there are three possible reasons that I find this result. First, individuals who were too optimistic on arrival in Germany, upon observing lower than expected wage offers, did not accept these offers in the hope of getting higher ones. Second, individuals, after observing lower wages, determined that they needed to increase their existing human capital through further education or job training in order to acquire expected higher wages. Third, demotivation in the form of depression, after witnessing access to host country institutions, resulted in lower search intensity which in turn lowers job market outcomes. Due to the nature of the data, I am unfortunately unable to fully determine the significance of each of these aspects. Therein, I recommend further research conducted on this topic in order to determine which aspect plays a larger role in determining the observed outcomes. In so doing more precise policy implications can be suggested.

A full review of the literature pertaining to this chapter can be found in section 3.4. This literature informs my research questions, methodology and results. Further information on the survey and context of this sample can be found in chapter 2. In the next section, section 7.2, I outline the data and variables used in the analysis. I then examine the presence of belief updating in section 7.3. Section 7.4 outlines the model and identification strategy, while section 7.5 includes the results and discussion. Section 7.6 concludes.

7.2. Sample and variables

In this section, I outline the sample and data used, and describe the variables that pertain to my analysis.

Sample and survey

In order to study the question of how differences in beliefs on access to the labour market affects entry and attachment for asylum seekers, it is best to examine a sample that does not have an assured path to acquiring the legal right to stay and work in Germany. One such sub-population of asylum seekers are Afghans in Germany.

The most recent mass migration of Afghans to Germany started in 2014. This wave is not viewed as a direct result of conflict, as with the former Afghan migration waves, but as a result of prolonged war and economic uncertainty. Therein, the claim for seeking asylum due to the risk of persecution or serious harm is not as readily accepted as with the Syrian sub-population (Fischer,

2019). The increased scrutiny in the legal process of asylum seekers from this sub-population has, thus, led to the variation of legal statuses witnessed today.[1] Coupled with greater differences in socio-economic backgrounds, this scrutiny has led to increased differences among Afghans in access to the labour market in Germany.[2]

We conducted the survey on Migrants' Expectations (SME) study in 2019 on Afghan migrants in Germany, as there is no data that captures both integration outcomes and market expectations for this population. There are several benefits to this study, namely, it has measures for beliefs on access to differing markets, including the labour market, at time of arrival and interview. It also has direct measurements of labour market outcomes and has a relatively large sample to establish significance.

The SME study sampled Afghan migrants who lived in Munich, Hamburg or Berlin, or their surrounding areas, and were at least 18 years old. These three cities were chosen as they host the largest amount of Afghan diaspora in Germany. It used a Respondent Driven Sampling (RDS) approach to target respondents. It did so in order to encourage individuals with irregular or insecure legal statuses to participate, contributing to more diverse pathways to labour market access. Sampling occurred in two steps. In the first step, registry data was used to randomly sample individuals who fit the criterion outlined above. In the second step, participants were allowed to invite up to three individuals to also partake in the survey. Respondents were monetarily compensated for their time and invite.

The final sample consists of 1024 complete interviews, of which 24 percent were invited by registry sampling and the remaining through the RDS chains. The mean age of the sample is 31.6 years old (median 28). 37.8 percent of the sample are women, this corresponds to the German average (34 percent) (DESTATIS, 2021). While the sample overrepresents Berlin (55 percent of sample) there are no large differences between it and other cities, except for gender distribution (Munich has half as many female participants as in Hamburg or Berlin). The sample is representative on key characteristics of the population of interest; however, it has a slight oversampling of individual with a precarious status, for a full review of the survey see chapter 2.

Questions on beliefs of access to the labour market were asked directly after questions on current employment levels. In this way, respondents were primed to think of their situation in the labour market. The survey also asked about types of employment. After asking about their labour market situation, respondents were asked to declare what level of access they currently think they have using a four-point Likert scale [1-full access to 4- no access at all]. Next, respondents were asked to state what they thought their access to the labour market would be *after one year* of staying in Germany at their time of arrival, using the same Likert scale. In this way, though retrospective, the question tries to gauge the level of access to the labour market a respondent thought they would have after settling into the country and starting their legal process, before

[1] For asylum cases in 2019: 18% of Afghan asylum seekers were granted full refugee or subsidiary protection status compared to 82% of Syrians. A further 19% were given toleration status (Duldung) without deportation, in comparison to 1.1% of Syrians. 22.2% were found to have no asylum ground to stay (0.1% for Syrians), while the remainder of these cases were still under consideration at the end of the year (BAMF, 2020b).

[2] Previous Afghan migration waves were mainly composed of the intelligentsia and middle class.

doing so.[3] Please refer to appendix D.3 for the question items. After dropping observations with missing information on the access variables and both outcome variables, I am left with a sample of 960.[4]

Access beliefs and labour market outcomes

As outlined in section 3.4, in the case of forming a priori beliefs on access to the labour market, the presence of uncertainty and incomplete information leads to possible incorrect belief formation on actual access. Differences we may see in beliefs on access at time of arrival and at time of interview can, therefore, be interpreted as a difference in the information set that was present then and is present now, e.g. a belief updating after learning. This misspecification can be interpreted as beliefs that where a priori too optimistic or pessimistic about the future outcomes of a particular person (Bodvarsson and Van den Berg, 2013; Foster and Frijters, 2014; Sjaastad, 1962). The multi-level variable that captures the change in access beliefs was constructed using both access questions. I first take the difference between the two, then treat all positive values as the "positive" revision (upward updating) to expectations between time of arrival and at time of interview, and all negative values as the "negative" revision (downward updating). I construct the variable in this form in order not to subjectively impose any assumption on the degree of the revision, following Enders, Müller, and Hünnekes (2019), Bachmann and Elstner (2015) and Conlon et al. (2018). However, a concern in using retrospective survey questions to build this variable is that they could introduce errors into the estimation by creating endogeneity, e.g. recalling past beliefs on job market access could be rationalized ex post given actual labour market outcomes. Therefore, I also use instrumental variables constructed with other measures in the survey to capture the change to access beliefs variable. Please see section 7.5 and appendix D.2.2 for further discussion.

I use the question on current employment outcomes to construct two measures: a binary of being currently employed, and another measure that looks at level of employment [0-unemployed; 1-part-time employed; 2- full-time employed]. The first measure captures entry into the labour market while the second measures the level of attachment. In terms of employment level, one finds that 23.6 percent of respondents are employed, with the majority of employment in full-time contracts, see Table 7.1.[5]

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[3] According to the German Federal government the average asylum claim process time for Afghans in 2018 was 10.6 months (down from 14 months in 2014). Hence, one year after arrival was thought to be a sufficient time to ask about access level.

[4] This number also includes dropping those who came before the last migration wave. Furthermore, due to the number of controls used, and their individual missing observations, the end sample comes down to 800/801, depending on the outcome. Missings are assumed to be at random.

[5] Most of these contracts are with internships or job training programs (Ausbildung), followed by full-time contracts of regular employment. Only 1.1% of those employed are engaging in irregular work.

Table 7.1.: Summary statistics for labour market outcomes

	n	mean	sd	min	max
Curr. employed (bin.- any type)	960	0.236	0.425	0	1
Level of employment	959			1	3
Unemployed		0.764	0.425	0	1
Part-time empl.		0.055	0.228	0	1
Full-time empl.		0.180	0.385	0	1

Controls

In accordance with Banki (2004), Danzer and Ulku (2008), Fokkema and de Haas (2015), Foster and Frijters (2014), Münz (2017), and Mussino, Strozza, and Terzera (2014), and the literature on migrant labour market outcomes specified in section 3.4, one can roughly break down the determinants of beliefs on access to the labour markets as a combination of information on four key factors: personal market characteristics, migration outcomes, personal situation, and market dynamics. The belief that a person places on their probability of gaining employment, and hence actually applying, is therefore a function of their relative position on these four aspects. Information is usually built through the knowledge from both official and unofficial news sources, but in the case of migration a highly significant aspect is the network that migrants may have in the perspective host country and expats returning from it. These four aspects in turn inform the control variables in my analysis.

I use 12 variables, based on the literature, to control for aspects that may affect one's perceived access to the market. Following my identification strategy, I chose variables which capture the "fundamentals" that would influence a person's abilities to access the labour market (entry and attachment). In order to capture the fundamentals of the four factors specified, see section 3.4, the variables I chose capture: human capital ability from country of origin, familial presence in Germany, legal processes in the host country (Germany), German language abilities, personal (discriminating) factors, i.e. age and gender, network in the host country and finally location dynamics, i.e. city of residence. I do not add familial characteristics in the country of origin in the main analysis as, arguably, it is only in the case of the actual presence of family members in the host country where *access* to the labour market is affected, i.e. childcare considerations. Additionally, a difficulty in using observational cross-sectional data is that individuals have different time periods by which the updating of beliefs occurred. In a panel data framework, the researcher knows the time frame, be it months or years, depending on the period that data was collected, and adds time fixed effects (Enders, Müller, and Hünnekes, 2019). In this case the time frames are not readily expressed. To account for this, I also control on length of time since arrival in EU/ DE, so that similar individuals are compared.

Table 7.2.: Summary statistics for controls

	N	Mean	St.Dev.	Min.	Max.
Age at year of interview (years)	959	31.451	12.08	18	70
Female	959	0.368	0.483	0	1
Rel. & par. status in DE	960			1	4
No partner or children		0.656	0.476	0	1
Partner		0.033	0.179	0	1
Single parent		0.052	0.222	0	1
Partner and child(ren)		0.258	0.438	0	1
Educ R @ CO	955			1	7
No education		0.165	0.372	0	1
Pre-primary		0.054	0.227	0	1
Primary		0.249	0.429	0	1
Lower sec.		0.189	0.391	0	1
Upper sec.		0.221	0.415	0	1
Post-sec.		0.055	0.229	0	1
Tertiary		0.072	0.259	0	1
Type of employment @ CO	957			0	4
Never employed		0.475	0.499	0	1
Self-employed		0.172	0.378	0	1
Manual		0.164	0.371	0	1
Non-manual & civil		0.122	0.327	0	1
Management (all)		0.066	0.248	0	1
German Language Course	951			0	6
Non-taken		0.195	0.396	0	1
A1		0.221	0.415	0	1
A2		0.183	0.387	0	1
B1		0.259	0.439	0	1
B2		0.105	0.307	0	1
C1		0.034	0180	0	1
C2		0.003	0.056	0	1
Network in DE b/f arrival	960	0.369	0.483	0	1
Curr. health (self-rated)	958			1	5
Excellent		0.204	0.403	0	1
Very good		0.129	0.336	0	1
Good		0.316	0.465	0	1
Fair		0.223	0.417	0	1
Poor		0.127	0.333	0	1
Prec. Status	960	0.466	0.496	0	1
Still in legal process	957	0.339	0.474	0	1
Yrs since arriving in DE/EU	868	4.014	0.895	0.268	6.705
City	960			1	3
Munich		0.269	0.444	0	1
Hamburg		0.214	0.410	0	1
Berlin		0.517	0.499	0	1

Table 7.2 shows the summary statistics of the controls. From these controls, one finds that the sample is relatively young (mean age 31, median age 28), predominantly male (36.8 percent female), and lower educated (16.5 percent had no education, 30.3 percent achieved up to primary education and the next 40 percent reaching up to upper secondary education). Around half the sample have a child (49.3 percent) and/or are married (48.9 percent); yet only a quarter have their children and partner with them in Germany. Around half have never worked in their country of origin and, of those who did, the majority undertook either manual or self-employment (usually low-skilled). The majority have taken some form of German language course since their arrival in Germany. Two thirds achieved between A1 to B1 level German indicating that persons at time of interview have rather low to intermediate level language skills.[6] The average years since arriving in the EU / DE is around four years. Around a third of the sample is still in the process of applying for asylum.[7] Around 53 percent of the sample received some form of "secure" legal status, that is they are allowed to stay and can seek employment unhindered.[8] This leaves the other half of the population in some level of insecurity, whether through still awaiting a final decision or having an insecure legal status.[9] The majority of respondents declare that they self-rate their physical health to be from good to excellent. 37 percent of respondent knew someone in Germany prior to arriving.[10]

These statistics place the sub-population as rather low skilled, young, with only a third having a network at arrival, and having some type of family to support. Moreover, they have general (legal) access to the labour market in their respective cities; however, there are definite differences to that access for at least half the sample. Concurrently, most have been in Germany for some time, leading to possibilities for updating their beliefs on their own level of access to the labour market given the existence of possible uncertainties and incomplete information prior to arriving.

7.3. Are expectations too high?

One can clearly see that there has been updating after arrival when examining a priori and current beliefs on access to the German labour market, see Figure 7.1. At time of arrival around 47 percent of respondents sampled stated that they thought they would have full access to the labour market after staying one year. This number decreases to around 39 percent when asked about current (at time of interview) access levels. Accordingly, the number of respondents stating that they would have no access at all seems to have increased between at time of arrival and time of interview. Thus, the assumption of over-optimistic refugees seems to be present in this graphic. However,

[6] Most menial to semi-skilled jobs in Germany require up to a B1 level language level ability. The more skilled the job the higher the language level required to gain access. For instance, most university courses ask for C2 German language skills.

[7] This includes either in the initial application phase or in a follow up appeal process.

[8] Subsidiary protection lies within "secure" statuses. The caveat here is that the time allotted to individuals may greatly vary; however, on average the initial time frame to stay is from two to three years for secure statuses.

[9] Asylum seekers and persons who acquire "tolerated" status (Duldung) can take up employment after three months asylum registration. However, in these cases the respective foreign authority has to give permission that they may take up a particular job after finding one. Therefore, although restricted, the majority of individuals who have "insecure" statuses do have some chance of taking up gainful employment.

[10] This variable captures if a person knew a close family member or relative, friend, or acquaintance in Germany.

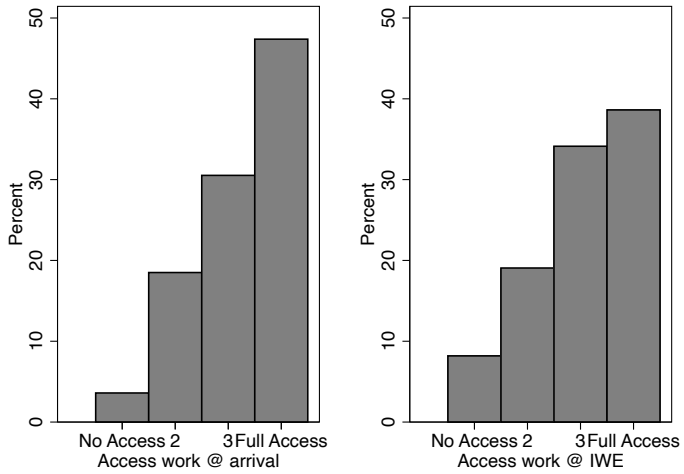


Figure 7.1.: Distribution of perceived access to labour market at arrival and interview time

Figure 7.1 is misleading as it displays between person differences. It hides the true story of how individuals have changed their beliefs after acquiring information about host country institutions after spending time in Germany. It is therefore important to examine the within person changes in beliefs.

A first look at Figure 7.2 gives an answer to my first research question (is there a large downward shift in beliefs after arrival?).

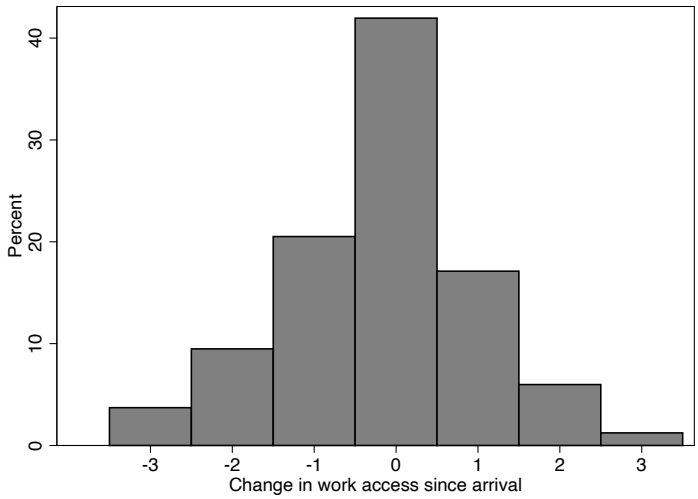


Figure 7.2.: Distribution of changes to perceived access to labour market

When it comes to changes in beliefs on labour market access, I find that there is no large skew towards the left, i.e. a large shift towards downgrading beliefs on access. Indeed, I find that, relative to their starting beliefs on access, 41 percent of the sample did not change their beliefs on their access to the labour market. Only a little over a third of respondents negatively revised their

prior beliefs, while 24.3 percent positively revised. Still, there are slightly more individuals who negatively revised their beliefs compared to the positive revision (by 10 percent).

There are slight differences between gender and education at country of origin. Women seem to revise less in the positive direction compared to men. This is not surprising as women in this sub-population are generally lower educated and are commonly expected to undertake child-rearing responsibilities; two factors that greatly depress access to the labour market. Belief update distributions across educational level at country of origin have very similar distributions, with slightly fewer individuals with tertiary education positively revising beliefs. The fact that there is no overwhelming negative shift in beliefs, however, does mirror results found in the literature on low skilled labour.[11] There are no large differences between changes of beliefs due to the presence of a network prior to arrival. This indicates that information was similar between networked and non-networked individuals, harkening to the result stipulated by Epstein and Gang (2006). Perhaps the largest difference can be found between cities. Refugees in Munich seem to have updated their beliefs more upwards compared to Berlin and Hamburg. Those in Hamburg on the other hand report either no change or a negatively revised belief, while Berlin is more evenly distributed. As there are little differences between other characteristics such as education in country of origin, age or legal statuses between cities, these findings support the inclusion of "city" as a measure of labour market institutional differences.[12] The results on gender, education at country of origin and network presence also bolsters their inclusion in my analysis. For these distributions, please see appendix D.4.

A priori beliefs seem to differ between individuals who revised either negatively or positively and those who were neutral (did not update their beliefs after arrival), see Figure 7.3. Those neutral have a right skewed distribution with the majority stating that they believed they would have only somewhat limited to full access after one year. Those with a negative revision had overwhelming high beliefs on access (over 90 percent thought they would have somewhat limited access to full access after one year). In juxtaposition, those with a positive revision had beliefs centred in the middle, with half expressing that they thought their beliefs would be severely limited and around 40 percent stating that they would have somewhat limited access. In none of these groups there are overwhelming pessimistic beliefs (belief of no access at all) at time of arrival.[13]

[11] Where it was found that these types of migrants generally do not have large difficulty in access given the type of employment they take up, see section 3.4.

[12] One caveat is in Hamburg where more individuals receive secure legal statuses. However, this difference does not decrease the chances of people being in employment in Hamburg but rather increases it.

[13] The highest percentage of those who relate that they would have no access at all after one year are 10% of those who received a positive shock, around 4 percent of sample who answered this question.

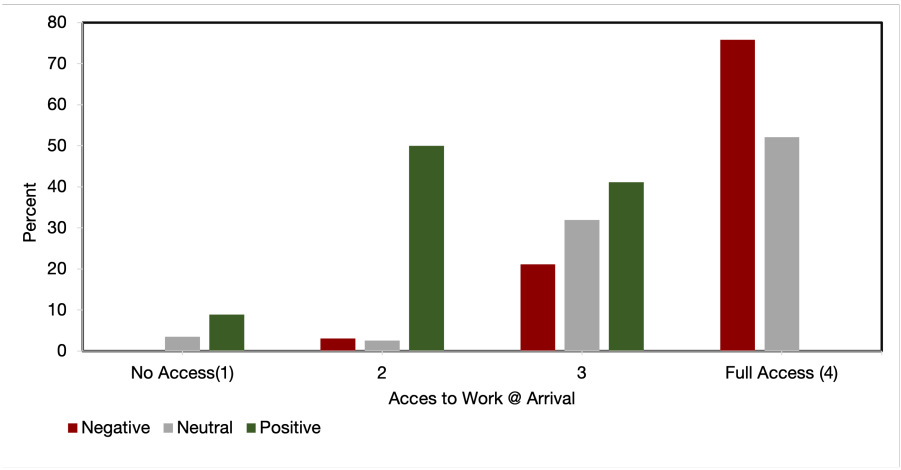


Figure 7.3.: Distribution of initial perceived access to labour market by type of revision

Examining the means of the outcome variables by groups, as depicted in Figure 7.4, a clear pattern emerges. Each revision direction seems to move the outcome variable by the expected relation. This pattern can also be seen in the second outcome variable where employment level is measured.[14] I estimate the effects of these relations in section 7.5.

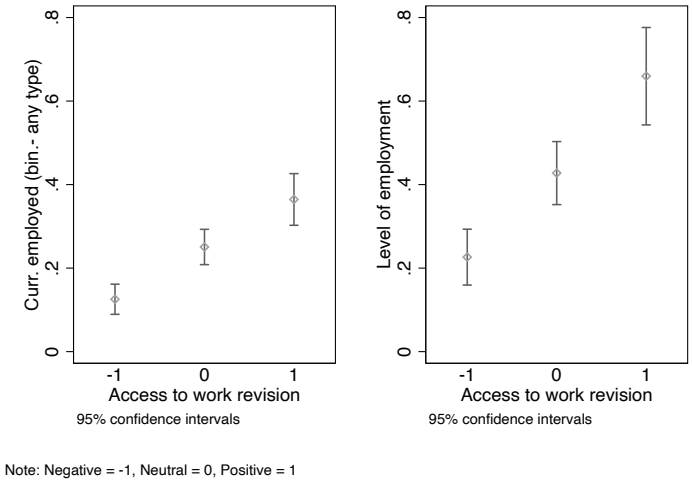


Figure 7.4.: Bivariate relations: means and confidence intervals

7.4. Model and identification

In this section, I describe the main model and identification strategy I use to measure the effect of changes of beliefs of access on labour market outcomes. In the main analysis I outline a model

[14] There is no difference in these results when women are excluded.

that directly relates the effects of the change in access beliefs on labour market outcomes. The results of this model are outlined in the following. Given the number of missing observations, this method allows for a fuller use of the data while identifying well the effects in question. Furthermore, I provide a non-parametric analysis, using Rubin's potential outcome framework (POF) to highlight the stability of these results. There are three main advantages for using the second approach: distributions between groups are more similar, therefore, decreasing bias in estimations, the approach disciplines the analysis as controls are chosen before estimation and finally effects are calculated as mean differences allowing for simpler estimation. In the main analysis I briefly highlight the POF approach and focus on the results. The complete discussion of the method, testing of key assumptions and robustness checks of this method are in the appendix, see appendix D.2.1.

There are in essence three main phases in the belief updating process on access to the labour market that a refugee undertakes. Before arrival an individual, i, builds their beliefs, A^0, about what their access would be after arriving to Germany. This initial belief on access is a result of the information set that they have on four fundamental aspects that would affect their ability to enter the labour market and the level of attachment they can part-take in (work full, or part-time). These four aspects are: their human capital and host country language abilities, their legal process outcome, personal factors such as the presence of family and network, and finally local job market dynamics. The first aspect relates to the skill level a person brings with them to the host country, as documented in migration literature, these skills become more useful with the ability to speak the host country language and their recognition by the institution. The second aspect pertains to the legal ability to take up employment. The third relates to non–skill characteristics that either aid or deter the ability to take up employment as well as the level of employment that can be taken up. For example, the presence of family members has been shown to either increase the take up of employment in the case of men or significantly reduce it in the case of women. Current health outcomes, gender and age also play crucial roles in determining access. As determined in the literature, the presence of network in the host country not only mediates the type of information received about the level access an individual would have after migration but can also act as a way to gain employment. While the fourth aspect, local job market dynamics, highlights the market responsiveness to the skill level offered by an individual (e.g. market demand).

After arrival the individual discovers their actual access level through learning about the labour market institution of Germany in relation to these aspects. This in turn leads them to update their beliefs had prior beliefs been incorrect, A^1. Difference between ex ante and ex post beliefs highlights the differences between the information that an individual had prior to migration and the information they now have after learning about the realities of the labour market institution. Change to market access beliefs can take three forms: upwards/positive (prior was over-pessimistic), same (neutral), or downward/negative (prior was over-optimistic).

In the data we observe A^0 and A^1 as well as the actual outcome Y for each individual i. Therefore, one can measure the effect of the change to beliefs on the probability of being in employment as:

$$Pr(Y_i = 1|\Delta A_i, \mathbf{C}_i) = Pr(\alpha + \eta \Delta A_i + \mathbf{C}_i\gamma + \mu_i > 0|\Delta A_i, \mathbf{C}_i) \tag{7.1}$$

where $\Delta A = A_i^1 - A_i^0$ is the change in beliefs after learning about the labour market institutions in Germany and η is the effect of learning on the probability of being employed or level of

employment. **C** is a vector that collects the controls and the vector of γs are the separate effects of the controls. α is a constant, representing a constant probability of employment and μ_i is an error term capturing individual preferences of being in employment.

There are two outcomes of interest: the probability of being in employment, and the probability of being in part-time or full-time employment (attachment). I estimate the first quantity using a probit model and the second using an ordered probit model. For the first outcome the specification strategy is relatively straightforward as I am estimating the probability of being in one of two outcomes - employment or unemployment. Therefore, the specification is as follows:

$$Pr(Y_i = 1|\mathbf{X}_i) = Pr(\mathbf{X}_i\beta) = \Phi(\mathbf{X}_i\beta), \tag{7.2}$$

where Φ is a cumulative distribution function of the standard normal distribution.

For simplicity, the independent variable of interest, change in access beliefs, ΔA, and the control variables, **C**, are all collected in vector $\mathbf{X}_i$ in these notations. The second outcome, however, is better identified by a multinomial choice model as it can take the form of three possible outcomes: unemployment, part-time employment, or full-time employment. More importantly these choices are ordered as there is a clear ascent of attachment to the labour market from none to full.

Here, I estimate that the probability that a latent variable Y_i^* lays between two thresholds κ_{j-1} and κ_j for each alternative j such that:

$$Pr(Y_i = j) = Pr(\kappa_{j-1} \leq Y_i^* \leq \kappa_j) = \Phi(\kappa_j - \mathbf{X}_i'\beta) - \Phi(\kappa_{j-1} - \mathbf{X}_i'\beta), \tag{7.3}$$

where $j = \{0, 1, 2\}$.[15] In the results section I present the marginal effects of each revision group (upward revision and downward revision of beliefs) for each outcome.

Another way in which to model this problem is by using the potential outcome framework (POF). Using the terminology of the POF, belief revisions can be seen as a "shock" to prior beliefs given new information. In essence the problem in the estimation of the effect becomes a classical missing data one where the researcher does not observe the potential outcome had a person not received information that changed their beliefs on access. Therefore, in order to measure the desired effect, I use the Roy-Rubin Model approach. I compare individuals who changed their beliefs upward (downwards) after experiencing an information "shock" to individuals who did not change their beliefs. In the jargon of this methodology the former are the two treatment groups while the latter is the control group. In so doing, there is the added complication that the treatments here were not assigned in a randomized experiment, but rather through a non-random assignment mechanism; essentially meaning that individuals can select into the treatments. This selection bias problem exists due to the fact that individuals with more capabilities (human capital) may also perceive access more favourably. In order to deal with this selection bias, I base my analysis on the propensity score matching approach as first described and suggested by Rubin (1974) and Rosenbaum and Rubin (1983) and further outlined by Caliendo and Kopeinig (2008) and Imbens and Rubin (2015). The idea is to mimic randomized control trials where treatment is assigned randomly and is, thus, independent of the treatment assignment. One does so by first matching on all fundamental characteristics that pertain to both treatment assignment and (potential) outcome.

[15]Here: 0 = unemployment; 1 = part-time employment, and 2 = full-time employment.

The estimated average treatment effect on the treated is than calculated by differencing means in the two groups. Using this method of identification allows the analysis to be more disciplined as it does not depend on the parametric model used to identify the effect. There are different matching algorithms suggested by the literature. The main analysis presents the (baseline) nearest neighbour matching results using serial probit models and the multinomial matching results.[16] For further detail of the assumptions, specifications used, and diagnostic testing associated with this method please refer to appendix D.2.1.

7.5. Results and discussion

Results

In this section I show the results of updating beliefs, through a positive or negative revision, as compared to those who ex ante had set correct expectations on labour market outcomes (did not update their beliefs). In the below, I first discuss the results from the main model described in section 7.4. Afterwards, I report the results from the POF exercise, which confirms the main results. I first present the results on the negative revision to beliefs on access, followed by the positive revision. I present the marginal effects in both sets of results in order to facilitate interpretation. Those with neutral belief updating are the reference group. Therefore, the results show the loss (gain) in the probability of employment having negatively or positively updated beliefs after arrival as compared to having a priori "correct" beliefs. The interpretation for the probability of reaching differing attachment levels to the labour market is similar.

Table 7.3 column 1 shows the results from the probit model on probability of current employment. Columns 2-4 hold the results from the ordered probit model on attachment to the labour market. Please refer to Table D.1 for the full results including individual effects of the controls.

Table 7.3.: Average marginal effects for negative and positive belief revisions on labour market outcomes

	1	2	3	4
Outcome	Employed (curr.)	Level: unemployed	Level: part-time	Level: full-time
Negative revision	-0.116***	0.102***	-0.025***	-0.076***
	(0.028)	(0.027)	(0.008)	(0.021)
Positive revision	0.034	-0.048	0.009	0.038
	(0.039)	(0.037)	(0.007)	(0.030)
N	801	800	800	800
Adj. R^2	0.209	0.171	0.171	0.171

Average marginal effects shown at means. Omitted category is neutral (no updating). Column 1 shows probit results for employment probability. Columns 2 to 4 show ordered probit results for unemployment, part-time and full-time, respectively. Controls are included in each specification. Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$.

[16] The serial approach takes each "shock" separately in its matching algorithm, while multinomial approach estimates the propensity score for the shocks simultaneously.

I find that there is indeed a negative and highly significant effect of downwardly updating one's beliefs on access to the labour market on labour market outcomes. There is a probability decrease of around 12 percent of not undergoing any type of employment, after controlling on relevant characteristics, compared to someone who did not update.

This negative and significant result is mirrored in the variable capturing the type (level) of employment, which captures labour market attachment. The effect of a negative update increases the probability of being unemployed by 10 percent. The probability of being in part-time employment decreases by 3 percent, while full-time employment decreases by 8 percent. Attachment to the labour market, therefore, seems to decrease as individuals downgrade their beliefs on access to the labour market after arrival. Moreover, the increase in magnitude between full-time and part-time employment, suggests that downgrading hampers full labour market integration outcomes.

Turning to the positive revision, one finds a completely different picture. The results are overall not significant. Thus, I do not find that the effect of positively updating beliefs on access to the labour market changes either the probability of being in employment or the level of attachment to the labour market.

The effects of the control variables are mostly as to be expected from the literature, see Table D.1 in appendix D.1. Women have a lower probability of being in employment and reaching full-time status. Reaching a higher level of German language is highly significant and has a positive effect on being employed and the level of employment. In terms of country of origin human capital, we find a highly significant positive effect from type of employment, e.g. higher skills translate to an increase in employment probability and attachment, but not from education. This finding is in line with literature on low-skilled migrant labour outcomes. A decrease on the scale of (self-rated) health negatively effects employment outcomes. There are no significant effects from legal status or network presence on employment outcomes but there is a positive and significant effect from time spent in Germany. Also as expected from the discussions in chapters 2 and 6, Munich has a positive and significant effect on employment outcomes. One possible deviation from the literature is a significant negative effect from age on employment outcomes; however, the magnitude is low at -.008 percent for being in employment.[17]

Results using the propensity score matching techniques confirm the main results. Table 7.4 presents the (baseline) results using nearest neighbour matching on serial probit models for each outcome (columns 1 and 3)[18] as well as the ordered multinomial probit model taking into account both treatments simultaneously (columns 2 and 4).

I find that the results for the negative "shock" on beliefs is likewise highly significant in both specifications. Negatively updating beliefs on access to the labour market decreases the probability of being in employment by 15 percentage points (pp) and the probability of reaching higher employment levels by 25 pp compared to those who did not experience a shock. On the other hand, there is no significant difference between those who experienced a positive shock to those

[17]This result, however, can also be explained by the low-skill nature of the sample, e.g. difficulty in finding work at an older age given skill abilities. This explanation is bolstered by a three times greater magnitude on not reaching full-time employment compared to part-time.

[18]In the serial probit model specification each shock is examined separately, please see appendix D.2.1 for the benefits of conducting the analysis in this format.

Table 7.4.: ATT results for negative and positive belief "shocks" on labour market outcomes

	Negative Shock		Positive Shock	
	1	2	3	4
Outcome	NN(1)	(Ordered) probit	NN(1)	(Ordered) probit
Employed (curr.)	-0.154***	-0.146***	0.069	0.069
	(0.051)	(0.031)	(0.079)	(0.048)
Observations	562	749	494	749
Employ. (level)	-0.253***	-0.252***	0.189	0.166
	(0.092)	(0.056)	(0.136)	(0.089)
Observations	562	748	493	748

ATT shown for on common support. N varies given matching strategy used (control vs treated). Columns 1 and 3 use serial probit matching, columns 2 and 4 use ordered probit matching for multi-treatments. Robust standard errors in parenthesis. * $p < 0.10$, **$p < 0.05$, *** $p < 0.01$.

who did not. These results are further backed by other modelling and specification techniques, please refer to appendix D.2.

There are two possible limitations when it comes to the modelling used in the main analysis, namely, possible reverse casualty and omitted variable bias. I address both of these concerns briefly in the next part of this section and in further detail in the robustness checks, see appendix D.2. Afterwards, I discuss the possible mechanisms that may be driving the results found.

A note on endogeneity

As the data used in this analysis is cross-sectional one limitation is that the analysis conducted may suffer from reverse causality concerns through a possible endogeneity of the belief updating variable, e.g. that the time of arrival beliefs on access levels were measured retrospectively. Recalling beliefs on job market access could be rationalized ex post given actual labour market outcomes. The best way to address this concern is to measure ex ante the beliefs on access to the labour market, e.g. at actual time of arrival or before migration. Such a solution, however, is not possible by the very nature of the cross-sectional survey used and further studies would need to be conducted to orchestrate such an identification technique.

One possible way as to address this concern is to utilize an instrumental variable(s) (IV). The instrument chosen must pass the three usual criteria in order to be considered valid. The IV must be independent of the error term ($Z \perp\!\!\!\perp u$), where Z is the instrument variable and u is the error term. It must be relevant, i.e. be highly correlated to the endogenous variable X in question, at least partially, when conditioning on other exogenous characteristics, e.g. $X \not\perp\!\!\!\perp Z$. Finally, it must also pass the exclusion restriction, that is the instrument only affects the outcome through its relation with the endogenous variable, e.g. $Y(Z, X) = Y(X)$ (Wooldridge, 2010).[19]

[19] As a further discussion on the need for these assumptions and their implications are outside the scope of this study, I therefore relegate a more in-depth discussion of them to Wooldridge (2010).

I propose using two instrumental variables to address this concern: change in access beliefs for healthcare services and change in access beliefs for social services in Germany. These two dimensions are unrelated to the probability of finding a job in that the ultimate employment decision does not rest on if the individual has or does not have access to these two services. Moreover, being employed or not does not have an effect on the perceived access level an individual may have for these two services. Therefore, learning about access for these dimensions does not affect an individual's probability for employment. However, they highly correlate with the learning process about the labour market as they measure the extent to which one individual learns about the institutional frameworks in Germany. Put differently they measure the extent to which an "optimistic" or "pessimistic" migrant revises his or her beliefs.

How this process works regarding healthcare access is rather straight forward. Upon arrival and registration with the German authorities, asylum seekers are issued an insurance card, this in turn allows arriving asylum seekers to update their beliefs about what level of access they have to German institutions after learning about how healthcare works, both in regard to tangible access, such as having an insurance card and the presence of healthcare facilities, and intangible access, such as being able to communicate with medical professionals. Importantly, access to healthcare is not determined by a person's employment status. Moreover, the learning that occurs in regard to the healthcare institution in Germany should not affect the probability of being in employment.

The second instrument's pathway, change in beliefs on access to social services, is not so readily observed. One may argue that current access may in turn affect the probability of employment, that is if one has high access to social services, specifically financial aid, that they may be less likely to engage in searching for employment. The key here is that I utilize the variation of the *change in access beliefs* to social services, therein the *process of learning* on another German institution, and not the actual level of current access. Furthermore, according to the legal regulations governing asylum seekers as outlined in the Asylum Seekers' Benefits Act (Asylbewerberleistungsgesetz), theoretically there should be less possibilities for this occurring. This law was implemented with the view of providing only very limited financial aid to asylum seekers in order to deter individuals with "bogus asylum claims who were assumed to come to Germany not for fear of persecution but for obtaining a level of welfare they could not attain in their countries of origin" (Gluns, 2018). Therein, the social welfare aid given to those in the asylum seeking process are mainly conducted in aid-in-kind with regards to two aspects: basic necessities (notwendiger Bedarf) and personal necessities (persönlicher Bedarf).[20] The level of assistance given depends only on the age of the individual and their family status and changes if they have a recognized legal status (e.g. more financial aid given) (Gluns, 2018). In the case where an asylum seeker has been recognized, access to the social security system falls under the Second Book of the German Social Code (SGB II) if they are generally able to work but are unemployed. In this case, the individual must not only be registered with the responsible employment seeking agency but also must "be willing to accept any reasonable employment and actively attempt to end their unemployment" (Müller, Mayer, and Bauer, 2014). Hence, the motivation to look for work for both those unemployed with and without a secure legal status should be the same. The level of learning on this institution therefore should mirror that found on the labour market even more

[20]Basic necessities cover: food, accommodation clothing, healthcare and some consumer goods, while personal necessities cover transportation and communication.

closely than the healthcare sector. Adding in further possible confounding variables as related to the law, i.e. age, family status, legal status, health level and length of legal stay would then allow for the exclusion restriction requirement to be met (Angrist and Pischke, 2009).[21]

The following presents each revision as a treatment within the IV framework. The first and second stage equations are as follows:

$$\widetilde{Tr}_i = \theta + \mathbf{Z}_i\pi + \mathbf{C}_i\delta + \nu_i \tag{7.4}$$

$$Y_i = \alpha + \beta\widetilde{Tr}_i + \mathbf{C}_i\gamma + \mu_i \tag{7.5}$$

Y_i and $\widetilde{Tr}_i$ are the outcomes and (potentially) endogenous treatment indicator for each individual, respectfully. $\mathbf{Z}$ is a vector containing the two instruments and $\mathbf{C}$ is a vector containing the control variables. π, β, δ and γ are the effects of the instruments, treatment, and the controls of each specification, respectively. θ and α are constants and μ_i and ν_i are the error terms. Equation 7.4 is used in the first step to predict the values of the treatment which are then used in the estimation of 7.5. Error terms are adjusted accordingly. The system is estimated two times, once for each treatment (positive and negative). In the following, I outline the results from tests on endogeneity and then discuss briefly the instruments' validity and results.

In order to conduct testing, I rely on established results by Angrist and Pischke (2009) and Wooldridge (2010) on the consistency of using linear modelling in IV estimation in the presence of discrete endogenous treatments. First, I test if the suspected endogenous variable is truly endogenous, by conducting the Durbin and Wu-Hausman tests of endogeneity. Here the null hypothesis is that the variable in question is not endogenous.[22] I find that neither test can reject that the treatment variable in question, change in access beliefs to the labour market, is not endogenous for each outcome model, see Table D.9. This suggests that there is little need to conduct an IV estimation as the original concern does not hold. Further testing of the instruments' validity also confirms that the instruments chosen are strong and identify well the variable in question. Moreover, even if one was to assume that the endogeneity concern still holds, the results from the IV estimations confirm the results found in the main analysis. For a full discussion of the instruments, their tests, and the instrumental results please refer to appendix D.2.2.

The second concern, the presence of omitted variable bias, is always existent in structural modelling. This concern is alleviated through the analysis using the potential outcome framework. This framework ensures that the results are not sensitive to the control variables chosen in the main analysis. Running this non-parametric estimation also ensures that the results are robust to model specification, as the results are simple differences in means between revision groups. No assumptions on distributions are therefore made. I also ensure that the results are robust to matching algorithms used. For the full detail of these results, please refer to appendix D.2.

[21] As in the main analysis I also include network size before arrival as it has a direct impact on knowledge acquired before migration and social support in the host country.

[22] The difference between the two tests is that Durbin test uses the error terms variance with the assumption that the variables being tested are not endogenous; while the latter uses an estimate of the error terms where the model assumes the variables tested are endogenous, with the null that the variables are not endogenous.

Discussion

Two central questions arise from the main results. First, why is there only a significant difference in employment outcomes and levels in the case of those who exhibit an over-optimistic expectation on labour market access at arrival, i.e. negatively revise their beliefs? Second, what leads to the difference in information between time of arrival and time of interview?

The first question could be answered by three possible mechanisms. The first is that respondents who were overly optimistic about their chances have on average higher expected wages, which when faced with a lower wage offer distribution, are significantly less likely to take up employment altogether or be fully attached to the labour market. This is in turn, not the case for those who were too pessimistic about their chances. They take up employment at the same level and degree as those who had set correct expectations from the beginning. A second possibility is, that individuals who had set too high expectations upon arrival, after receiving a negative information signal after arrival, decided to take up education first in order to increase their abilities to access the prior expected offers. In this way, if we find that there is significantly different uptake in education outcomes, then we could say there is a course correction on misspecified beliefs. A third possibility is pure demotivation. Put simply, the emotional experience of a negative revision on the beliefs of access to the labour market is large enough to significantly reduce overall employment outcomes of individuals, by decreasing job-search intensity. Most likely the reasons for the observed results are a combination of the three. While it is not possible at the moment to fully pull apart and test these three mechanisms through concrete experimental designs, there is some information in the data that may shed light on these pathways.

The SME survey also collected information on education acquired in Germany, both already completed and currently in as well as future educational plans. I use the items on past, current, and future education plans to try to understand which pathway may play a role in the differences we see in current employment outcomes. I run a similar specification as in the main outcome variables on three educational outcomes: completed an educational track, currently in an educational track, and future educational plans.[23]

From the results in columns 1 and 2 in Table 7.5 there seems to be a negative effect of the probability of being currently in an educational track or planning on going into education in the future after having "negatively" updated beliefs on labour market access. Positively updating beliefs seems to have no effect on having completed or currently being in education. Similar to the negative updating case there seems to be a decrease in plans to attend educational tracks in the future in the positive case. These results imply that updating beliefs on labour market access only serves to decrease educational outcomes compared to those who did not update. To check these results, however, I ran a similar specification to the one of the robustness exercises. Here I use the IV model to estimate the results. The results for each type of updating are shown in columns 3 and 4 of Table 7.5. The results seem to now show that there is a positive effect on completed education in Germany after upgrading beliefs. Moreover, the results regarding the negative shock are bolstered. Indeed, there is now a negative effect of having completed educated given a downgrade in beliefs. Yet, results are not stable across models for the case of positive updating. Currently, the results on the negative revision case would seem to suggest that the motivation

[23]Education variables are binary outcomes.

Table 7.5.: Marginal effects for mechanism (positive and negative)

	Probit		(IV) Probit	
	1	2	3	4
Outcome	Neg.	Pos.	Neg.	Pos.
Educ. (compl.)	0.037	0.038	-0.282**	0.367***
	(0.038)	(0.038)	(0.125)	(0.139)
Educ. (curr.)	-0.054*	0.012	-0.400***	0.051
	(0.029)	(0.033)	(0.139)	(0.238)
Educ. (planned)	-0.089**	-0.122**	-0.365***	0.073
	(0.045)	(0.054)	(0.098)	(0.278)

Columns 1-2: Probit using main identification strategy, marginal effects at means shown. Columns 3-4: Probit models with IV on treatment variables, marginal effects at means shown. Columns 1- 2 **N**: compl. educ. 798; curr. educ. 798; planned educ. 662. Columns 3-4 **N**: compl. educ. 736; curr. educ. 737; planned educ. 615. Robust standard errors in parenthesis. Controls from main analysis are included. * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$.

mechanism may be playing a significant role compared to the other two mechanism possibilities. Yet, modelling education decision in this manner may not well identify education choices as we do not observe the exact time when education decisions are made relative to employment decisions. Further research, therefore, should be conducted in order to ensure that these results hold.

In a panel data scenario, difference-in-difference approaches could be used to measure the change in individual beliefs on outcomes. In future research, information on expected wage distributions and expected outcomes, as well as information on job offer rates and search intensity, measured at arrival and then again at time of interview with a specified time delay would be beneficial in disentangling these mechanisms.[24] To ensure that causality can be inferred in this context, information would be best collected in an experimental framework where either information on actual wage distributions or job arrival rates, for a person like the respondent, is given (to the treated) and then the belief of access at the two time periods as well as actual outcomes are measured for both groups. In order to better identify the role that education decisions play, it would also be beneficial to obtain data on the exact timing when education occurred. Having this information would help in disentangling the mechanisms outlined above.

I now turn to the second prominent question, the reasons for which the information at time of arrival, which beliefs were built on, was different from the information at time of interview. Changes to the information set could have occurred due to: wrong, misleading or incomplete information from the respondent's network, misjudgement of own abilities compared to others, and/or changes in market fundamentals after arriving in the host country. Indeed, there is research that backs up the presence and significance of each of these aspects in their role on

[24]The SME study does have information on expected wages in the presence of a legal status in Germany. Relating changes in perceived access to these expected wage distributions proved to be insignificant, however, given the imprecision of the measure to the question at hand.

labour market differences in outcomes as outlined in section 3.4. It would, therefore, be preferable to conduct further research which looks directly at network information quality.[25] Collecting information on size and type of information received and how well it can be trusted would be helpful in identifying these mechanisms, especially when it comes to labour market outcomes and dynamics, e.g. job offer rate and wages in the host country. It would also be interesting to compare this type of information with other information sources such as news, social media, NGOs and official news outlets. Once more, an experimental design would allow for an easier method of establishing causality. Here different information could be given to treatment groups, through differing information channels, then data on access beliefs and actual labour outcomes could be measured at pre-defined time periods. Selection into treatment(s) should then be assigned given a set of characteristics and participants randomly assigned. Of course, the added problem of contamination exists within these frameworks, especially as one would be dealing with network dynamics. Therefore, the best means to conduct such a study is to look at a group where networks do not intersect.

7.6. Conclusions

In this chapter, I examine the role that information, in the form of belief updating on access to the labour market, has on labour market outcomes. I examine if there is overwhelmingly negative updating after arrival and test if changes in beliefs affect actual labour market outcomes in terms of entry and attachments. I define two possible belief updating: a positive revision in the case of individuals who originally arrived with over-pessimistic beliefs on market access, and a negative revision in the case of individuals who came with over-optimistic beliefs on labour market access.

I find that there is indeed updating of beliefs after arrival given new information on the market. However, unlike discourse claims, there does not seem to be overwhelming negative updating occurring after arrival for this sub-set of asylum seekers and refugees. On the contrary, the majority either do not update their beliefs or positively update them, meaning that there is not a large over-optimistic group of asylum seekers. Furthermore, I find that in the case of a positive updating of beliefs after arrival, there are no significant differences in labour market outcomes compared to the control group. However, there are significant differences to employment outcomes in the case of negative belief revision.

I posit that there may be three reasons for this, too high expectations regarding wage offers in Germany, substituting employment for further education in order to increase human capital and hence the ability to receive higher wages and/or de-motivation. Data available in the SME study provides insufficient evidence to back a clear mechanism but suggests that demotivation may be significant.

[25] Unfortunately, the information on network in the SME study does not vary across groups. Identifying other data sets that had information at least when it comes to pre-migration network size, through looking at returnees to villages in country of origin, data collected by the UN IOM, also did not prove to be fruitful as there was also no variation across treatment and control groups.

Two possible limitations of this study are: a possible endogeneity error as beliefs on labour market access are measured simultaneously and possible omitted variable bias. Although, preferably, these beliefs would have been measured, in a panel data format, at actual time of arrival and at time of interview, that I do not find a significant effect for those who received a positive shock coupled with my finding from using two instrumental variables suggest that the original endogeneity concern of the treatment variable may not exist. Furthermore, results of the IV analysis confirm the overall main results. Running a non-parametric estimation as well as several sensitivity analyses also allay concerns of possible omitted variable bias.

Further research should focus on understanding the mechanisms behind why individuals who negatively revised beliefs have decreased labour market outcomes. Research should focus on decomposing each mechanism's magnitude on the ultimate result. In addition to the mechanisms discussed above, a calculation of how much of this result is actually "loss" due to information misspecification and how much is due to individual's hope would also be interesting. Furthermore, as network information is key, further research on the type and quality of information that are ultimate determinants of belief setting would also be of interest.

Part IV.

Conclusion

8. Closing remarks

The aim of this dissertation is to provide research on how incentives and beliefs as well as migration stressors effect economic integration outcomes. It does so by showing how possible pre and post migration stressors can affect the integration process of asylum seekers in the German context. It also adds to the growing literature on the role that subjective expectations play in decision making processes through looking at forced migrants' integration decisions.

In chapter 4 we find that contrary to assumptions, there is a positive effect of traumatic experiences on cognitive-cultural integration, i.e., language acquisition, and close to zero effect on structural integration, i.e., employment uptake and enrolment into education. We posit that due to possible higher motivation to remain in the host country, in the short-run, Syrian asylum seekers seem to be integrating despite the added burdens of having experienced traumatic events. In chapter 5 we find that proficiency in language acquisition responds to economic incentives. The analysis shows that asylum seekers who expect a higher chance to obtain a permanent residence permit from being competent in German have a significantly higher language proficiency. Chapter 6 finds that Afghan asylum seekers have upwardly biased beliefs about the risk of deportation, which is not affected after giving information on actual deportation levels. The intention to overstay does not likewise change. We also find that the perceived chance of obtaining the legal right to stay is a key determinant of the intention to overstay. Moreover, differences across cities over the belief of receiving the legal right to stay hampers human capital investment. Finally, chapter 7 finds that there is a change over time of refugees' beliefs on access to the labour market, indicating the presence of learning. However, there is no overwhelming over-estimation of access to the labour market at time of arrival. Moreover, only in the case of downgrading initial beliefs is there a negative effect on entry into and attachment to the labour market.

There are several limitations to the work in this dissertation, owing to the nature of the data sets used. Namely:

- As the samples are conducted on individual sub-populations of refugee groups, e.g. Syrians and Afghans, it is difficult to conduct cross population analyses. This limits the external validity of these studies.

- The small sample size of the QPLC study, and perhaps the SME, as well as the cross-sectional nature of these studies limits the scope with which causal effects can be inferred.

- In the case of chapter 4, the lack of control group limits the ability to test the effects of coping mechanisms. Moreover, the non-existence of a priors on the effect of the treatment (traumatic events on integration) limits the power of our estimates. Furthermore, while our

measures for trauma are based on DSM-V and are grounded in research on the measurement of traumatization and PTSD they cannot be as thorough as a full mental health screening.

- In chapter 5 a limitation of the methodology is that incentives and actual investments are observed at the same time. It would have been desirable to observe the economic incentives first and then investments with some time delay, given that individuals could rationalize their investments ex post.

- Similarly, in chapter 7 the measurements for beliefs on access to the labour market would be preferably measured in a panel data format, at actual time of arrival and at time of interview. The results from the IV estimation somewhat allays the concern of endogeneity, however. Moreover, omitted variable bias may also be of concerned, but the sensitivity analyses may also allay this concern. Information on the labour market and job search would also have been beneficial in this analysis. Further information would also be needed to completely disentangle the three mechanisms outlined.

These limitations point to the need to conduct larger scale panel studies on several migrant populations that look at similar stressors while simultaneously including a module on subjective beliefs. These types of studies would allow researchers to examine the interactions highlighted in this dissertation more conclusively and allow for easier causal identification. Studies could also compare between populations to identify similarities and differences between these stressors and beliefs on population level outcomes, which would enrich the analysis.

Even with the limitations of these studies a few important themes are highlighted. Firstly, the presence of post-migration stressors as seen by legal ambiguities creates incentives for foregoing long-term host country human capital investments and entering employment earlier. These post-migration stressors may even be more concerning compared to pre-migration stressors such as experiencing traumatic events. This substitution could, in the long-term, cause similar social instability in Germany as the one witnessed in France, namely, the increase of cultural enclaves and the growth of a disenfranchised youth. This concern becomes ever more prescient with the results of chapter 6 which indicate that the intent to overstay is high in a sub-population which has a higher incidence of legal ambiguity.

Secondly, the work in this dissertation highlights the importance of taking into account subjective expectations in individual decisions and therein public policy. These studies show that beliefs guide the decisions to ultimately invest in further human capital or decide to overstay one's legal permit. Moreover, not only do current beliefs matter in these decisions but also the change in beliefs after learning about one's actual market position, as seen in chapter 7.

Finally, the work in this dissertation puts into focus the fact that there are some preconceptions about the last wave of refugees that are faulty. These misconceptions arise from the limited amount of data present on forced migration. To that end, as this type of migration is expected to increase given current political, economic, and environmental uncertainties in many countries, further information needs to be collected in order to fully understand the motivations and pitfalls that arise from forced migration.

Appendix

A. Appendices for "The Role of Trauma for Integration"

A.1. Summary statistics

Table A.1.: Summary Statistics

	Imputed data	Original data				
	Proportion/ Mean	Proportion/ Mean	St. dev.	Min.	Max.	N
Employed (currently)	not imputed	0.095		0.000	1.000	252
Education (currently enroled)	not imputed	0.159		0.000	1.000	252
German language abilities	-0.114	0.003	0.799	-2.286	1.581	202
Traumatic experiences						243
No traumatic experience	0.151	0.152		0.000	1.000	
1 traumatic experience	0.119	0.119		0.000	1.000	
>1 traumatic experience	0.730	0.728		0.000	1.000	
Health (self-assessed), 1=poor 5=excellent	3.350	3.352	1.294	0.000	1.000	250
Feel anxious/ depressed/ stressed	0.293	0.290		0.000	1.000	248
Residence status						208
Other status	0.115	0.096		0.000	1.000	
Subsidiary protection	0.239	0.236		0.000	1.000	
Full refugee/asylum status	0.646	0.668		0.000	1.000	
Intention to stay						249
Uncertain	0.417	0.418				
Short-term	0.189	0.189		0.000	1.000	
Long-term	0.394	0.394		0.000	1.000	
Family available	0.321	0.321		0.000	1.000	252
Resilience high (scored higher than 4.3 on BRS Scale)	0.207	0.209	0.407	0.000	1.000	249
Age arrived in DE	28.969	28.976	10.862	16.000	66.000	250
Education						250
Primary or less	0.281	0.280		0.000	1.000	
Lower secondary	0.292	0.292		0.000	1.000	
Upper secondary & short-cycle tertiary	0.311	0.312		0.000	1.000	
Tertiary	0.115	0.116		0.000	1.000	
Co-ethnic network in DE	0.337	0.337		0.000	1.000	252
Duration of stay in Germany (DE) (in years)	1.529	1.523	0.667	0.167	3.833	248
Female	0.242	0.242		0.000	1.000	252

A.2. Selection into (more) traumatic experiences?

Although the presence and frequency of traumatic events is clearly witnessed in this sample, one can argue that perhaps the pervasiveness of the phenomenon does not hold for the entire Syrian population. That is, some groups of individuals may have experienced more traumatic events concerning the war and flight out of the country more than others. We show that this is not, largely, the case. For instance, as the youth took a greater role in the civil uprising in Syria, one can argue that the younger cohorts felt the brunt of traumatic events, e.g., that the youth report higher levels of traumatic events compared to older age groups. Therefore, we look at the number of own traumatic events between age groups. A one-way ANOVA test did not show significantly different means of frequencies in reporting trauma between the five age groups, roughly representing 20 percent of the age distribution for each group ($F(4, 250) = 0.176, p = 0.951$).[1] Following this same line of reason, one can also argue that there may be differences in reporting across physical health. That is unhealthy individuals may report more frequently that they experienced traumatic events. A difference in means test confirms, that there is no significant differences in the number of traumatic events experienced between reported subjective health groups (one-way ANOVA: $F(4, 248) = 1.856, p = 0.119$).

Two other key characteristic that can differentiate experiencing traumatic events during a war are educational and, very closely related, socio-economic status. The median level of traumatic events experienced are three to four, across education levels, and the differences are not significant (one-way ANOVA $F(3, 249) = 1.030, p = 0.380$). Hence, the frequency of events seems to be widespread across educational backgrounds. We furthermore break up the International Socio-Economic Index of Occupational Status (ISEI) measure into four groups categorizing the type of work conducted (machine operator/craft worker, sales/clerical work, technician, professionals/managers). Similar to education, we do not find a difference in reporting traumatic events between groups (one-way ANOVA $F(3, 166) = 0.943, p = 0.421$).

Moreover, one could expect that there may be differences between reporting traumatic experiences given the type of residence status a person receives, e.g., a full asylum status compared to subsidiary protection. Once more, however, we do not find a significant difference in means given legal status (one-way ANOVA: $F(2, 206) = 1.940, p = 0.146$).

There are two factors however where we see differences in reporting, when considering traumatic events directly affecting the respondent: gender and duration of stay in Germany. There is a weakly statistically significant difference between genders as determined by a one-way ANOVA ($F(1, 253) = 3.088, p = 0.080$). Men report more own traumatic events as compared to women (0.590 ± 0.336 events).

Moreover, one can also state that there could be differences between people who arrived earlier in Germany compared to more recent arrivals. For example, people who left later during the war may have experienced more events than earlier movers. Therefore, we divide the sample into four groups: up to 1 year, from 1 year to 1.5 years, from 1.5 to 2 years and more than 2 years in

[1] We also do not find a significant difference in means between groups when we look at reported high impact events. The same holds when we look at the number of traumatic events experienced overall in the same time-period.

Germany. The one-way ANOVA analysis does reveal a slight significant difference in reported traumatic events between groups ($F(3, 247) = 2.435, p = 0.065$). We therefore conducted a Tukey post-hoc test here and found that the difference, as supposed, arises from differences in reported means between those who came earliest and those who came latest (24+ months vs. up to 12 months: -1.209 ± 0.504 events, $p = 0.080$).[2] However, this difference is only slightly significant as the 10 percent level. We control for these factors in the multivariate analyses.

Overall, we notice a pattern within our sample of a high number of traumatic events reported, that have had a high impact on respondents and that are largely irrelevant of the characteristic of the respondent. Hence, these findings suggest that experiencing traumatic events in the last few years in Syria was so pervasive as to affect the majority of the population in Syria throughout this time.

A.3. Robustness of results

In order to ensure that our results are robust, we have conducted several additional analyses. The results are stable against alternative specifications. The few exceptions regarding traumatic experiences are described in this appendix.

In some additional analyses, we have included other definitions of the traumatic events, e.g., only focusing on events with reported great effect or only based on the four events that had a direct effect on a person. When only including events with reported great effect, we do not find the significant positive effects of experiencing traumatic events on language attainment, although the sign of the result does not change. The effects on language attainment are considerably smaller and insignificant. We find the same pattern, when using the measure that is based only on the four events that had a direct effect on a person.

Moreover, with regard to the stress process theory and the dose-response concept, we specified traumatic experiences using a count measure of the number of traumatic events. Using this specification, we do not find a significant positive effect of experiencing (more) traumatic events on language attainment.

We also have run tests restricting the time that the event has occurred to two years, to see if events that occurred recently have a more predominant effect, or if they change the results presented above. In this analysis we do not find significant positive effects of experiencing traumatic events on language attainment. For educational enrolment we find a negative effect of having experienced more than one traumatic event within the last two years, compared to no traumatic event. This effect is significant at the 10 percent level.

[2] Comparisons for other groups are: 13-18 months vs up to 12 months (-0.714 ± 0.445 events, $p = 0.379$); 19-24 months vs up to 12 months (-0.793 ± 0.362 events, $p = 0.129$); 19-24 months vs 13-18 months (-0.079 ± 0.401 events, $p = 0.997$); 24+ months vs 13-18 months (-0.495 ± 0.532 events, $p = 0.789$); 24+ months vs 19-24 months (-0.415 ± 0.465 events, $p = 0.808$).

B. Appendix for "Language Proficiency and Economic Incentives"

Table B.1.: Summary statistics of dependent variables

	Mean	SD	Min	Max	Count
Dependent Variables					
Testscore	4.418	2.772	0	8	141
Convscore	2.432	1.463	1	5	132
Independent Variables					
Female	0.262	0.441	0	1	141
Education level in CO	2.276	1.183	0	4	141
No Educ.	0.780	0.269	0	1	
Primary	0.177	0.383	0	1	
Lower Sec.	0.319	0.467	0	1	
Upper Sec.	0.241	0.429	0	1	
Tertiary	0.184	0.389	0	1	
Age	30.690	10.351	18.416	66.333	141
Months (time in DE)	19.481	7.936	2	46	137
Earnings (Exp. wage: B1-No Lang.)	266.216	257.570	0	1491	83
Perm. Residence (Exp. permit res.: B1-No Lang.)	25.918	21.673	-10	90	122
Secure Job (Exp. job: B1-No Lang.)	27.628	20.889	-50	80	121

Elicited Expectations Questions

Imagine an individual like you, that is, with the same gender, age, education, etc. We would like to ask you what the chance is that some scenarios happen. Imagine that the person is in either of five cases:

1. *He/She has not completed any type of course or education in Germany,*
2. *He/She has completed a basic German language course or an integration course (level B1),*
3. *He/She has completed an advance German language course (level B2),*
4. *He/She has completed a vocational training degree ("Beruflicher Ausbildungsabschluss") in Germany*
5. *He/She has completed a university degree in Germany.*

- *For each of these cases, what do you think is the percent chance that the individual will obtain a permanent residence in three years? Please give a number or mark your answer on the scale. (0-100)*

- *For each of these cases, what do you think is the percent chance that the individual will obtain a good and secure job in three years? Please give a number or mark your answer on the scale. (0-100)*

- *For the first case (no education in Germany), what do you think is the monthly wage that the individual can expect in Germany? Please give the currency.*

- *For the remaining cases, what do you think is the monthly wage that the individual can expect in Germany after successfully completing the course or degree? Please give the currency.*

C. Appendices for “From Asylum Seekers to Illegal Migrants”

C.1. Sources and additional official statistics

Sources of official statistics used in this analysis are accessible online, here:

1. Eurostat: First instance decisions on applications by citizenship, age and sex - annual aggregated data (rounded).URL: https://ec.europa.eu/eurostat/databrowser/view/MIGR_ASYDCFSTA__custom_55039/default/table?lang=en.

2. Statistisches Bundesamt, DESTATIS, URL: https://www-genesis.destatis.de/genesis/online

    - Code 12531-0008: Persons seeking protection: Germany, reference date, sex, category of protection status/protection status, country groups/citizenship.

    - Code 12531-0026: Persons seeking protection: Länder, reference date, sex, category of protection status/protection status, country groups/citizenship.

3. Deportations and departure statistics from the German federal government:

    - 2014 - Deutscher Bundestag, Drucksache 18/4025.URL: http://dipbt.bundestag.de/extrakt/ba/WP18/649/64916.html

    - 2015 - Deutscher Bundestag, Drucksache 18/7588.URL: http://dipbt.bundestag.de/extrakt/ba/WP18/717/71788.html

    - 2016 - Deutscher Bundestag, Drucksache 18/11112.URL: http://dipbt.bundestag.de/extrakt/ba/WP18/794/79434.html

    - 2017 - Deutscher Bundestag, Drucksache 19/800.URL: http://dipbt.bundestag.de/extrakt/ba/WP19/2312/231225.html

    - 2018 - Deutscher Bundestag, Drucksache 19/8201.URL: http://dipbt.bundestag.de/extrakt/ba/WP19/2436/243665.html

- 2019 - Deutscher Bundestag, Drucksache 19/18201.URL: http://dipbt.bundestag.de/extrakt/ba/WP19/2589/258926.html

4. Compiled statistics on deportations by origin country, state (*Länder*) responsible of the deportation and year of deportation:
   Bundeszentrale für Poltische Bildung, URL: https://www.bpb.de/gesellschaft/migration/flucht/zahlen-zu-asyl/265765/abschiebungen-in-deutschland.

5. Short explanation of the toleration status:
   Bundeszentrale für Poltische Bildung, URL: https://www.bpb.de/gesellschaft/migration/kurzdossiers/233846/definition-fuer-duldung-und-verbundene-rechte?p=all

Table C.1.: Distribution of status among Afghan migrants by German federal states and year

		Germany	Berlin	Hamburg	Bavaria
2016	Open status	68%	71%	48%	67%
	Recognized	27%	24%	48%	26%
	Denied	5%	5%	4%	7%
2017	Open status	41%	42%	24%	41%
	Recognized	51%	52%	72%	51%
	Denied	8%	6%	5%	9%
2018	Open status	30%	29%	18%	30%
	Recognized	61%	62%	76%	61%
	Denied	9%	8%	7%	9%
2019	Open status	22%	20%	13%	21%
	Recognized	66%	68%	80%	68%
	Denied	12%	12%	7%	10%

Source: Authors' calculation from DESTATIS. Recognised is category "Annerkant Schutzstatus" which according to source includes those recognised with refugee, asylum, subsidiary protection and national ban protection statuses.

C.2. Flow chart of RCT

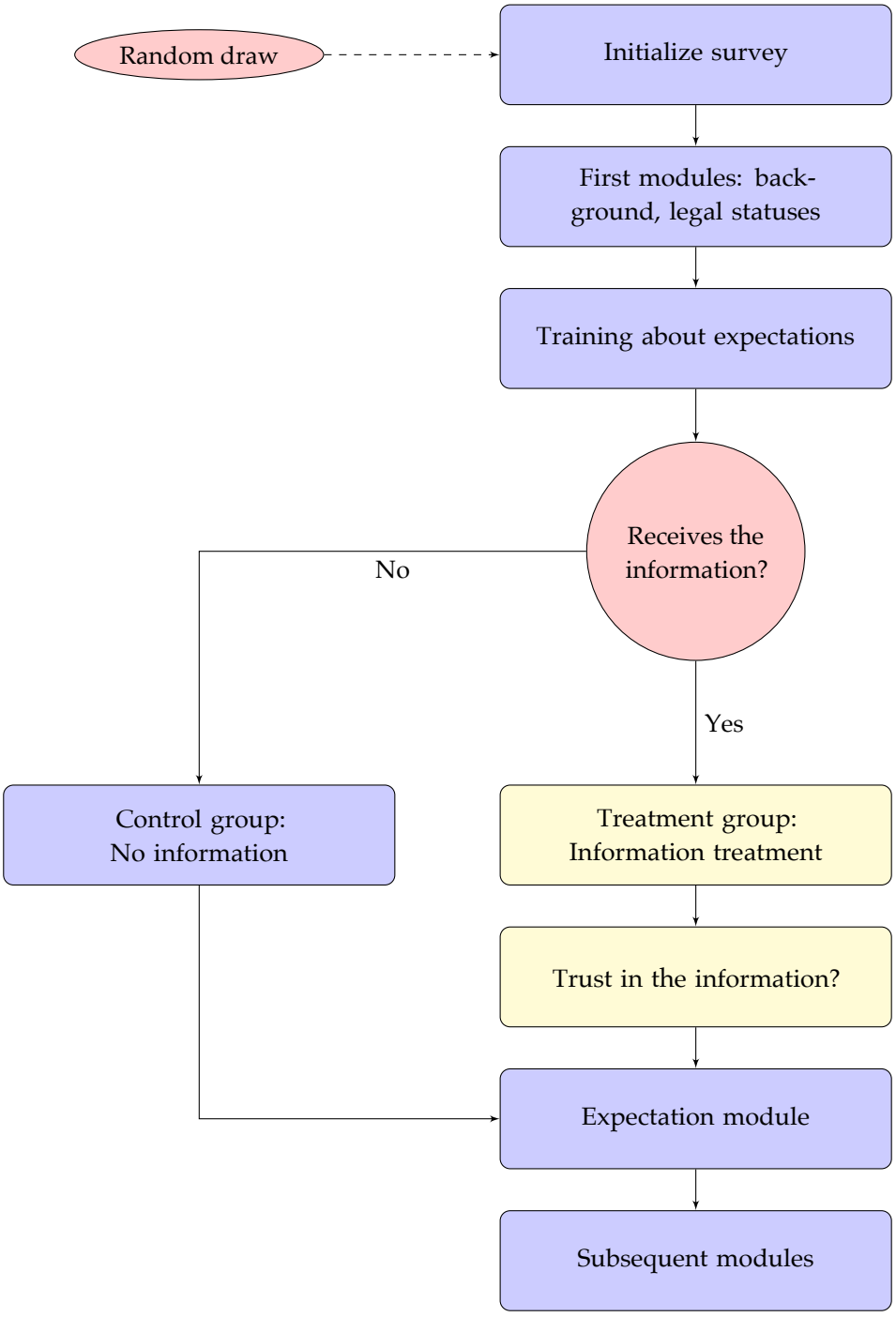


Figure C.1.: Flow-Chart of the survey design

C.3. Value of the information using a Bayesian-updating model

Following Zafar, 2011, we can calculate the value of the information provided in the RCT using a Bayesian-updating model on the probability of a binary event (deportation or no deportation). Define:

$$X_{t+1}^{with\ info} = \eta X_{t+1}^{w/o\ info} + (1-\eta)(I - X_t) \tag{C.1}$$

where $X_{t+1}^{with\ info}$ is the belief about the deportation at time $t+1$ once the information is received, $X_{t+1}^{w/o\ info}$ the similar belief that would have been held without the information, X_t the belief held about deportation at time t, and I is the content of the information. The parameter η measures the relative importance of the new information compared to previous information for forecasting the proportion of deportation in the future. Denote $\bar{A}$ the population average of a variable A, we can derive an expression of η as:

$$\eta = \frac{\bar{X}_{t+1}^{with\ info} + \bar{X}_t - I}{\bar{X}_{t+1}^{w/o\ info} + \bar{X}_t - I} \tag{C.2}$$

Because information is provided randomly, the average expectation of the treated provides an expression for $\bar{X}_{t+1}^{with\ info}$. Similarly, the average expectation of the untreated provides an expression for $\bar{X}_{t+1}^{w/o\ info}$. We report $R = 1/\eta - 1$ as our measure of the importance of the information.

Table C.2.: Parameter R by city

All cities	Berlin	Hamburg	Munich
0.141	0.274	-0.130	0.206

Table C.2 shows the estimated value of R for the whole sample and in each city. It confirms that the information is of relatively low importance in general. The information is of largest importance in Berlin. Moreover, when distinguishing between sub-groups of the population, see Table C.3, we find that the information is significantly more important for men, and those with poor German. However, the importance of the information is not necessarily larger for people with already more erroneous beliefs (above median beliefs).

Table C.3.: Parameter R by characteristic

Men	Women	Stab.Stat.	Prec.Stat.	High-sk.	Low-sk.
0.220	0.156	0.189	0.185	0.182	0.208
Short stay	Long stay	Poor Germ.	Good germ.	X_t Below med.	X_t Above med.
0.206	0.185	0.228	0.171	0.196	0.180

C.4. Mediation analysis

Table C.4.: Intermediate regressions for the mediation analysis in Table 6.9

	Obt. RtS	Lang. score
Munich resident	-0.16***	-0.35***
	(0.02)	(0.09)
Secure status	0.06***	0.23***
	(0.02)	(0.09)
Female	0.01	-0.19**
	(0.02)	(0.08)
Age	-0.00	-0.11***
	(0.00)	(0.02)
Age squared	0.00	0.00***
	(0.00)	(0.00)
Years since arrival	-0.00	0.24***
	(0.01)	(0.03)
Years of education	0.00	0.05***
	(0.00)	(0.01)
Residual u	0.00***	0.00
	(0.00)	(0.00)
Obtain RtS		0.40**
		(0.16)
Constant	0.70***	3.74***
	(0.07)	(0.37)
Observations	879	879
R^2	0.212	0.320

Notes: Mediation analysis using linear models. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D. Appendices for "Over-optimism and Job-market Access in asylum seekers in Germany"

D.1. Main analysis: full results table

Table D.1.: Average marginal effects for negative and positive belief revision on labour market outcomes

	1	2	3	4
Outcome	Employed (curr.)	Level: unemployed	Level: part-time	Level: full-time
Negative revision	-0.116***	0.102***	-0.025***	-0.076***
	(0.028)	(0.027)	(0.008)	(0.021)
Positive revision	0.034	-0.048	0.009	0.038
	(0.039)	(0.037)	(0.007)	(0.030)
Age at year of interview (years)	-0.008***	0.008***	-0.002***	-0.006***
	(0.001)	(0.002)	(0.000)	(0.001)
Female	-0.143***	0.133***	-0.031***	-0.102***
	(0.032)	(0.032)	(0.009)	(0.025)
Rel. & par. status in DE	-0.009	0.010	-0.002	-0.008
	(0.013)	(0.012)	(0.002)	(0.009)
Educ @ CO	-0.003	0.003	-0.001	-0.002
	(0.009)	(0.009)	(0.002)	(0.007)
Type of employment @ CO	0.031***	-0.031***	0.007**	0.024***
	(0.012)	(0.011)	(0.003)	(0.009)
German Language Course	0.019*	-0.023**	0.005**	0.017**
	(0.010)	(0.009)	(0.002)	(0.008)
Network in DE b/f arrival	-0.012	0.015	-0.013	-0.012
	(0.028)	(0.027)	(0.006)	(0.021)
Curr. health (self-rated)	0.038***	-0.033***	0.008***	0.025***
	(0.011)	(0.011)	(0.003)	(0.008)
Prec. Status	0.032	-0.039	0.009	0.030
	(0.046)	(0.046)	(0.011)	(0.035)
Still in legal process	-0.003	0.006	-0.001	-0.005
	(0.045)	(0.045)	(0.011)	(0.035)
Yrs since arriving in DE/EU	0.035**	-0.033**	0.008**	0.025**
	(0.016)	(0.016)	(0.004)	(0.012)
City				
Munich	0.424**	-0.113***	0.023**	0.090**
	(0.170)	(0.044)	(0.009)	(0.035)
Berlin	0.072	0.015	-0.004	-0.011
	(0.158)	(0.033)	(0.008)	(0.025)
N	801	800	800	800
Adj. R^2	0.209	0.171	0.171	0.171

Average marginal effects shown at means. Omitted reference category is neutral (no updating). Column 1 shows probit results for employment probability. Columns 2 to 4 show ordered probit results for unemployment, part-time and full-time, respectively. Current health reversed for ease of interpretation: 1 - Poor, 5- Excellent. Hamburg is reference category. Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$ *** $p < 0.01$.

D.2. Robustness

In this section, I show results using other models and methods to ensure that the findings in the main results section are not due to the type of model, control variables or specifications chosen. I also show results addressing endogeneity concerns.

First, I re-evaluate the results using non-parametric methods. There I use the potential outcome framework to define belief revision as a form of treatment and then calculate the average treatment effect on the treated (ATT) after matching using propensity scores. Within this section, I also respecify the matching algorithms used in order to test the robustness of the results. In the non-parametric results I also address omitted variable bias concerns. Afterwards, I outline the results found from using instrumental variables to address possible endogeneity concerns as outlined in **??** using the potential outcome framework terminology. Finally, I re-specify the treatment groups into four distinct groups and compare each with the variables used for matching as controls in probit and ordered probit models in order to ensure the results are not model specific.

D.2.1. Non-parametric estimation

Non-parametric model

As explained in the main analysis, the problem of identifying the effect of shocks to individual's beliefs of their access to the labour market on their labour market outcomes is in essence a classical missing data problem.

The suitability of using this approach lies in the way that new information is received by the refugee. A refugee builds their belief on the level of access they would have after coming to Germany, they then discover their actual access level after arrival through learning about the labour market institution of Germany. This in turn leads them to update their beliefs had prior beliefs been incorrect. The matching approach is, thus, suited to this study as the data on change to market access beliefs can take three forms: upwards / positive (prior was over-pessimistic), same (neutral), or downward / negative (prior was over-optimistic). Of course, in my analysis positive or negative changes do not need to be literally assigned; however, I assume that the assignment is independent of current outcomes after matching on fundamental characteristics (see Enders, Müller, and Hünnekes, 2019).

There are three main advantages to using a matching approach over conventional regression analysis. First, it ensures the distribution of control variables are similar across treated and untreated groups, which decreases bias when estimating treatment effects (Dehejia and Wahba, 1999; Heckman and Todd, 2009; Imbens and Rubin, 2015). Second, using a matching approach disciplines the analysis since the set of controls are chosen before the estimation of the treatment effect. Finally, after matching, the treatment effect is non-parametrically estimated using mean differences (Dehejia and Wahba, 1999, 2002; Heckman and Todd, 2009).

I identify and estimate the effect outlined above using the propensity score matching technique(s) and average effect on the treated (ATT) outlined by Caliendo and Kopeinig (2008), where inference is based on comparing the difference between the outcome of a treated individual compared to the potential (unobserved) outcome had they not been treated. Formally, the object of interest is the below ATT relation:

$$\theta = E[Y(1) - Y(0)|D = 1] = E[Y(1)|D = 1] - E[Y(0)|D = 1] \tag{D.1}$$

where $D = 1$ indicates the treatment, $Y(1)$ the outcome of a treated individual (an individual who received a negative (positive) shock to their beliefs on market access), and $Y(0)$ is the counterfactual outcome of an untreated individual. As we do not observe this relation, we could only estimate the below relation:

$$E[Y(1)|D = 1] - E[Y(0)|D = 0] = \theta + E[Y(0)|D = 1] - E[Y(0)|D = 0] \tag{D.2}$$

This relation is only equivalent to the ATT if:

$$E[Y(0)|D = 1] - E[Y(0)|D = 0] = 0 \tag{D.3}$$

meaning that the potential outcomes are *independent (orthogonal)* to the treatment assignment (i.e. the conditional independence assumption (CIA) holds).

This is achieved, when the treatment is not a priori assigned, if one conditions on relevant covariates, X:

$$Y(1), Y(0) \perp D|X \tag{D.4}$$

with *relevance* meaning that covariates affect the probability that they are treated and the (potential) outcome. Including all relevant covariates "orthogonalizes" the relationship between the treatment assignment and the outcome. Thus, relevant for the identification strategy is "all" information that determines a person's belief in their own ability to access the labour market. Conventionally, as we are interested in the effect of the treatment on the treated, we need only ensure that Y(0) is independent, $Y(0) \perp D|X$. I outline the variables chosen to fulfil this condition below.

With a large number of characteristics, in my case 21 covariates (five continuous and 16 categorical), each with three possible outcomes, this exercise could be computationally burdensome. Therefore, following the literature, I rely on results from Rosenbaum and Rubin (1983) which show that conditioning directly on X characteristics is asymptotically similar to conditioning on the propensity to be treated given observed X (e.g. that $Y(0) \perp D|p(X)$, where $p(X) \equiv Pr(D = 1|X)$). By conditioning on the *propensity to be treated* (propensity score), an additional assumption of *common support* is therein introduced, which necessitates that a person with the similar X characteristics can be found in both the treated and untreated (counterfactual) groups and that it is not fully determined. This overlap assumption can be written as:

$$0 < p(X) = Pr(D = 1|X) < 1 \tag{D.5}$$

Fulfilling both assumptions allows for the ATT to be identified. I estimate the ATT by comparing the outcomes of each treated observation to one or several untreated (counterfactual) observations with the same (or similar) propensity scores. To build the counterfactual, I use individuals who

exhibit neutral (no change) in their beliefs on access to markets after staying in Germany. In the following, I show that both conditions (conditional independence assumption and the overlap / common support assumption) hold and that the treatment should therefore be independent of the (potential) outcome after matching.

As, I deal with two different treatments, I estimate an ordered probit model, where both treatments are outcomes of a common model. Here, I estimate that the probability of a latent variable y_i^* lays between two thresholds α_{j-1} and α_j for treatment j such that:

$$Pr(y_i = j) = Pr(\alpha_{j-1} \leq y_i^* \leq \alpha_j) = \Phi(\alpha_j - X_i'\beta) - \Phi(\alpha_{j-1} - X_i'\beta), \tag{D.6}$$

where $j = \{-1, 0, 1\}$.[1] Control variables are collected in X_i. This relation does not directly yield the propensity score. The propensity score, $p^m(X_i)$, is then the conditional choice probability of the treatment given the alternative, no treatment, e.g. no change to the perceived access to the labour market:

$$p^m(X_i) = \frac{Pr(y_i = m|X_i)}{Pr(y_i = m|X_i) + Pr(y_i = 0|X_i)}, \tag{D.7}$$

where m is the specific treatment and i is the observation.

I also estimate distinct probit models for the two treatments. The propensity score is estimated using:

$$Pr(D_i^m = 1) = Pr(X_i'\beta) = \Phi(X_i'\beta), \tag{D.8}$$

where $D_i^m = 1$ is a dummy variable which is 1 for an observation reporting an increase (prior over-pessimistic) and decrease (prior over-optimistic), respectively, and 0 when the observation reports no change. The estimated probability is a direct estimate of the propensity score, since the sample only includes the specific treatment group and the untreated, i.e. $p^m(X_i) = Pr(D_i^m = 1)$.

After computing the propensity score, I match the treated and untreated observations using different matching approaches to ensure that the results were not based on one particular algorithm. Namely, I ran exact nearest neighbour matching and k-nearest neighbour matching, kernel matching[2] and stratified matching.

For each outcome variable I calculate the ATT as the mean difference across all matches, of treated and untreated respondents. I present below the ordered and serial probit results. I also conduct a regression adjusted and inverse probability weighting estimation strategies of the ATT, that take into account both treatments simultaneously.

[1] Here: -1 = negative treatment; 0 = neutral, and 1 = positive treatment.

[2] Kernel matching allows for larger weights to be given to untreated observations that are positioned closer to the treated observation; hence allowing for closer similarity between matched observations

Matching results

Following Caliendo and Kopeinig (2008) and Imbens and Rubin (2015) variables were chosen under the requirement of satisfying the CIA, that is they affect simultaneously the participation (decision) and the (potential) outcome. Several rules are recommended in choosing these variables. The variables should arise from the same source – a questionnaire with sufficiently rich data that can be matched upon that is also not too deterministic, e.g. some randomness must be observed to guarantee that persons with similar characteristics can be observed in both groups (control and treated). Choice of variables should be guided by economic theory, knowledge of previous research and information on institutional settings. The variables should also not be affected by participation (or anticipation of it) (Caliendo and Kopeinig, 2008). I structure my choice of variables to match on using these rules.

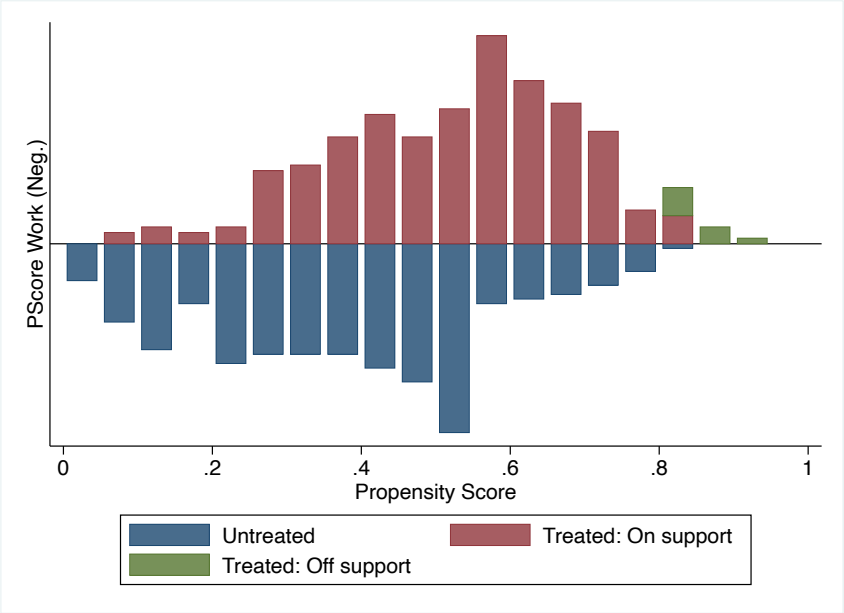
I use 21 variables to build the propensity score. As in the main analysis these covariates can be broken up into variables that capture four overarching factors that determine the actual access a person has to the labour market and on which beliefs on access is based on, see section 3.4. These are: personal factors, personal market characteristics, migration/legal outcomes, and general market dynamics. Table D.2, gives the (raw) summary statistics of these variables. The first six variables relate to personal characteristics and the next four [education at country of origin - to - network before arrival] relate to personal market characteristics. I include health outcomes within the migration controls as health after migration is strongly determined by migration trip conditions, especially in the case of refugees, see Banki (2004) and Danzer and Ulku (2008). Due to the nature of the survey data collected, there is not much in relation to the market characteristics outside of individual characteristics; however, I control on general market dynamics by including a city variable that captures the conditions within cities. Including a location dummy should suffice to capture market structures, especially in the case of low-skilled migrants, such as the ones in this sub-population, see Bevelander and Lundh (2017), Hartog and Zorlu (2009), Konle-Seidl (2017), and Munshi (2003). In conducting a sensitivity analysis, the presence of an omitted variable, say in relation to the market, did not prove to greatly change results, see below. As previously discussed, I control on time in DE/ EU to match individuals in the absence of panel data. Lastly, I also control on initial access level beliefs in order to match treated and untreated sufficiently. Although often cited in the literature as determinants of labour market entry, I do not include language skills and educational attainment in Germany in these variables as they most definitely are influenced by "participation" into the treatment group.[3]

[3] Please note that adding these two variables in the matching exercise does not change the results found.

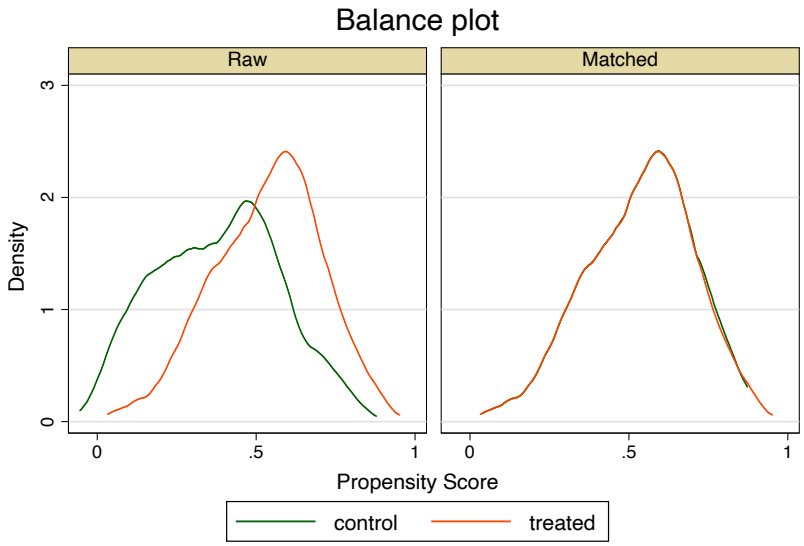
Table D.2.: Control variables (raw)

	n	mean	sd	min	max
Age at year of interview (years)	959	31.451	12.08	18	70
Age sq.	959	1135.003	933.851	324	4900
Female	959	0.368	0.483	0	1
Married (binary)	958	0.489	0.500	0	1
Has child(ren)	958	0.493	0.500	0	1
Rel. & par. status in DE	960			1	4
No partner or children		0.656	0.476	0	1
Partner		0.033	0.179	0	1
Single parent		0.052	0.222	0	1
Partner and child(ren)		0.258	0.438	0	1
Educ R @ CO	955			1	7
No education		0.165	0.372	0	1
Pre-primary		0.054	0.227	0	1
Primary		0.249	0.429	0	1
Lower sec.		0.189	0.391	0	1
Upper sec.		0.221	0.415	0	1
Post-sec.		0.055	0.229	0	1
Tertiary		0.072	0.259	0	1
Type of employment @ CO	957			0	4
Never employed		0.475	0.499	0	1
Self-employed		0.172	0.378	0	1
Manual		0.164	0.371	0	1
Non-manual & civil		0.122	0.327	0	1
Management (all)		0.066	0.248	0	1
Time worked in CO				0	5
Never worked	920	0.495	0.500	0	1
<6 months		0.018	0.135	0	1
6-12 months		0.024	0.153	0	1
1-5 yrs		0.233	0.423	0	1
5-10 yrs		0.132	0.338	0	1
10+ yrs		0.099	0.299	0	1
Network in DE b/f arrival	960	0.369	0.483	0	1
Curr. health (self-rated)	958			1	5
Excellent		0.204	0.403	0	1
Very good		0.129	0.336	0	1
Good		0.316	0.465	0	1
Fair		0.223	0.417	0	1
Poor		0.127	0.333	0	1
Feels anxious in last 2 weeks	953	0.450	0.498	0	1
Visible disability	960	0.279	0.449	0	1
Nonvisible disability	960	0.228	0.416	0	1
Prec. Status	960	0.466	0.496	0	1
Legal categories comb. detailed	926			1	4
Reject (full)		0.048	0.213	0	1
Open		0.352	0.478	0	1
Insecure stat.		0.068	0.252	0	1
Secure stat.		0.532	0.499	0	1
Still in legal process	957	0.339	0.474	0	1
Length of legal process (years)	957	2.244	1.415	0	6.918
Yrs since arriving in DE/EU	868	4.014	0.895	0.268	6.705
City	960			1	3
Munich		0.269	0.444	0	1
Hamburg		0.214	0.410	0	1
Berlin		0.517	0.499	0	1
Access work @ arrival	960	3.217	0.867	1	4

The two main considerations in propensity score matching are: 1) overlap/ common support and 2) covariate match quality (CIA). The below shows the results of test on these considerations. There is indeed sufficient common support as can be displayed by the densities of the propensity scores of the negative and positive shocks compared to the control group.

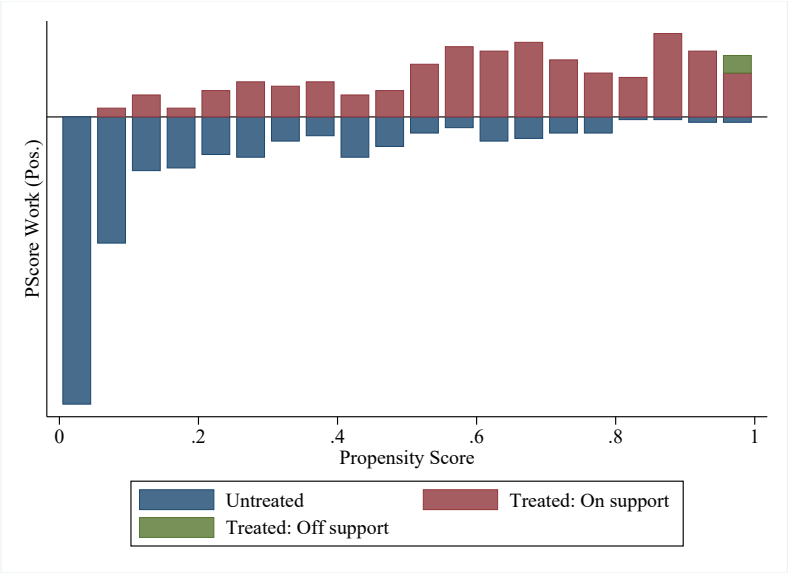


(a) Common Support

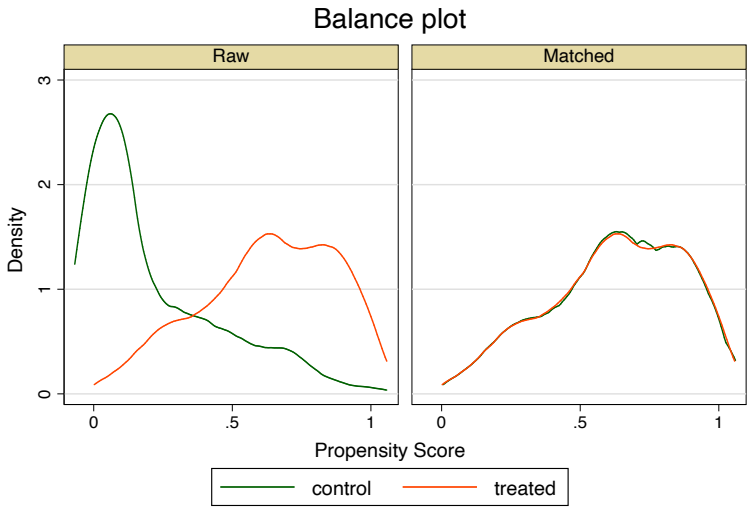


(b) Common Support – kdensity

Figure D.1.: Negative treatment



(a) Common Support



(b) Common Support – kdensity

Figure D.2.: Positive treatment

In the positive shock, there is a large spike for the untreated on the left. I restrict my analysis by calculating the ATT only for those on common support for both treatment types, positive and negative. I also test for sensitivity of matching during the results, through different matching strategies and throughout the robustness checks. The resultant distribution of matches, using the propensity scores can be seen in the two figures above.

There are two recommended ways to judge the match quality of covariates: looking at the difference in mean standard errors and differences in variances post matching (Lechner, 2001).

The below tables show the match quality of covariates for the treatments, before and after matching, the last two columns report odds ratio differences in variances.[4]

Table D.3.: Match quality (negative shock)

	Balance Stats			
	Mean Std. Diff (Raw)	Mean Std. Diff (Matched)	Var. Ratio (Raw)	Var. Ratio (Matched)
Access work @ arrival	0.605	0.040	0.382	0.810
Age at year of interview (years)	-0.018	0.034	0.849	1.054
Age sq.	-0.041	0.036	0.820	1.091
Female	-0.007	0.089	0.997	1.04
City	0.287	-0.097	0.986	1.35
Married (binary)	-0.017	0.047	1.001	1.001
Has child(ren)	-0.041	0.067	1.004	1.001
Network in DE b/f arrival	-0.080	-0.016	0.959	0.990
Rel. & par. status in DE	0.120	0.049	1.089	1.040
Educ R @ CO	-0.056	0.045	1.146	1.183
Type of employment	0.06	-0.012	1.0114	0.945
Time worked in CO	0.056	-0.011	1.06	1.105
Curr. health (self-rated)	0.188	0.009	0.904	0.855
Feels anxious in last 2 weeks	-0.195	-0.044	0.944	0.980
(Binary) visible disability	-0.139	0.055	0.896	1.058
(Binary) non-visible disability	0.184	-0.087	1.282	0.917
Prec. Status	0.234	-0.009	1.06	0.999
Legal categories comb. detailed	-0.202	0.029	1.048	0.944
Still in legal process	0.144	-0.026	1.086	0.989
Length of legal process (years)	0.142	0.003	1.061	0.952
Yrs since arriving in DE/EU	-0.233	0.055	0.175	1.073

Table D.4.: Match quality (positive shock)

	Balance Stats			
	Mean Std. Diff (Raw)	Mean Std. Diff (Matched)	Var. Ratio (Raw)	Var. Ratio (Matched)
Access work @ arrival	-1.336	0.168	0.542	0.753
Age at year of interview (years)	-0.325	-0.038	0.585	0.891
Age sq.	-0.334	-0.046	0.515	0.914
Female	-0.217	-0.078	0.880	0.943
City	-0.157	-0.022	1.494	1.191
Married (binary)	-0.216	0	0.968	1
Has child(ren)	-0.259	-0.064	0.967	0.979
Network in DE b/f arrival	-0.161	-0.133	0.908	0.918
Rel. & par. status in DE	-0.294	0.018	0.772	1.116
Educ R @ CO	-0.054	-0.013	0.993	1.159
Type of employment	0.045	0.250	0.949	1.167
Time worked in CO	-0.085	0.147	0.786	0.9272
Curr. health (self-rated)	0.012	0.122	0.942	1.115
Feels anxious in last 2 weeks	-0.041	0.106	0.996	1.031
(Binary) visible disability	-0.196	-0.162	0.846	0.864
(Binary) non-visible disability	0.216	0.122	1.328	1.153
Prec. Status	0.123	0	1.049	1
Legal categories comb. detailed	-0.085	0.030	0.955	0.903
Still in legal process	0.138	0.021	1.084	1.009
Length of legal process (years)	0.252	0.139	1.252	1.159
Yrs since arriving in DE/EU	-0.181	0.057	0.104	1.078

[4] Differences in mean standard errors should be closed to zero, and variance odds ratios should be close to one.

There are no large differences between covariates after matching. In the case of imperfect matching on some covariates, as in the case of the positive shock, Caliendo and Kopeinig (2008) suggest to run a model to see if the covariates are essential to the results and to run a regression adjusted model for robustness. The exclusion of these covariates do not change overall results. I also run a regression adjusted robustness, see below, where results hold.

Non-parametric results

I first relate the results using the serial probit method to estimate the propensity score and match using various forms of matching (nearest neighbour, stratification, kernel) approaches. I also report the results from the ordered probit method of estimating the propensity score, which uses both treatments in the specification. Caliendo and Kopeinig (2008) discuss the difference between using serial probit estimations and multinomial (ordered) probit models when it comes to estimating results for multiple treatments. They state that researchers using these methods found no great advantage in using the multinomial estimation strategy or even a slight advantage in using serial probit models, when it comes to a better balance of covariates. In my case, I also do not find a large difference in the overall results. Indeed, as the results on average show lower magnitudes using the serial probit approach over the multinomial approach, I treat these results as lower bound estimates for the effects found. Moreover, results are stable using other matching methods and models.

Moving to the ATT results, I first present the results on the negative shock to beliefs on access, followed by the positive shock. In both sets of results, I present the ATT using nearest neighbour matching (NN1), Column 1, followed by the nearest neighbour matching approach using four neighbours (NN4), Column 2. Column 3 shows results using the stratification method and Column 4, the kernel method. Column 5 reports the estimates using the ordered probit propensity score approach, taking into consideration both treatments.

Table D.5.: ATT results for a negative shock on labour market outcomes

	1	2	3	4	5
Outcome	NN(1)	NN(4)	Stratification	Kernel	(Ordered) probit
Employed (curr.)	-0.154***	-0.134***	-0.125***	-0.147***	-0.146***
	(0.051)	(0.032)	(0.041)	(0.037)	(0.031)
Observations	562	562	714	562	749
Employ. (level)	-0.253***	-0.220***	-0.187***	-0.224***	-0.252***
	(0.092)	(0.059)	(0.064)	(0.065)	(0.056)
Observations	562	562	714	562	748

ATT shown for on common support. N varies given matching strategy used (control vs treated). Columns 1-4 use serial probit matching, column 5 uses ordered probit matching for multi-treatments. Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

I find that there is indeed a negative and highly significant effect of receiving a negative shock to one's beliefs on access to the labour market on labour market outcomes, see Table D.5. There

is a probability decrease of, on average, 14 percentage points (pp) of not undergoing any type of employment, after matching on relevant characteristics, compared to someone who did not receive this shock. The magnitude of the decrease starts at 15.4 pp with exact nearest neighbour matching but slightly decreases in the stratification and kernel matching approaches. Looking at the fifth column, taking into consideration both negative and positive shocks simultaneously, the probability holds at around 14 pp. On the whole, however, results are stable across specifications in sign and magnitude. This negative and significant result is mirrored in the variable capturing the type (level) of employment, which captures labour market attachment. The effect on being in a lower category (part-time vs full-time or unemployed vs part-time, etc.) is around 23 pp, the average between all specifications, after receiving a negative shock compared to the control group. The same pattern is also found between magnitudes as before. Attachment to the labour market, therefore, seems to decrease as a negative shock is experienced.

Table D.6.: ATT results for a positive shock on labour market outcomes

	1	2	3	4	5
Outcome	NN(1)	NN(4)	Stratification	Kernel	(Ordered) probit
Employed (curr.)	0.069	0.106	0.062	0.106	0.069
	(0.079)	(0.067)	(0.078)	(0.069)	(0.048)
Observations	494	498	515	498	749
Employ. (level)	0.189	0.228**	0.158	0.247	0.166
	(0.136)	(0.091)	(0.140)	(0.124)	(0.089)
Observations	493	498	515	498	748

ATT shown for on common support. N varies given matching strategy used (control vs treated). Columns 1-4 use serial probit matching, column 5 uses ordered probit matching for multi-treatments. Robust standard errors in parenthesis. * $p < 0.10$, **$p < 0.05$, *** $p < 0.01$.

Turning to the positive shock, one finds a completely different picture. In all cases the signs are positive, however, the results are overall not significant as with the negative shock, see Table D.6. In terms of probability of employment, I do not find significance across the different matching approaches. In terms of the level of employment outcome, the exact nearest neighbour specifications (Column 1 and 2) start as insignificant then become significant at the 5% significance level with matching using four nearest neighbours; however, this quickly changes with all other matching approaches which show no significant effect on labour market outcomes (Columns 3-5). The significant result is therefore not stable over most specifications. Thus, I do not find that receiving a positive shock affects either the probability of being in employment or the level of attachment to the labour market. These results back the main analysis and are in line with the findings from other modelling and specification techniques, such as specifications using regression adjustment and inverse probability weighting, see below.

Non-parametric robustness: Omitted variable bias

A concern in using matching to address the issue of selection bias into treatment, is that of a potential omitted variable bias in the utilized control variables. Namely, that there is a crucial variable that one does not match on that affects the results found by violating the conditional independence assumption, through affecting the treatment assignment and the outcome. One way to alleviate this concern is by assuming such a confounder exists and introducing it in the analysis, as suggested by Rosenbaum and Rubin (1983) and implemented by Nannicini (2007). Here, we assume a binary covariate, which is i.i.d., that mirrors the distribution of a variable in the controls that is significantly different between pre-matched treated and untreated covariates. One should pick variables that are relatively "dangerous" in that they are different between groups and meaningful to the analysis, e.g. that economically there should be an expected difference. In the first step an unobserved covariate, U, is simulated with the condition of being in four groups determined by being in the treatment and the outcome value.[5] Afterwards, a value of U is then given to each subject according to "her/his belonging to one of the four groups defined by the treatment status and the outcome value" (Nannicini, 2007). The simulated confounder is then added to the matching exercise and the estimation is repeated and a simulated estimate of the ATT is calculated. In the Stata program, sensatt, standard errors are also calculated through imputing missing values of U. Please see Nannicini (2007) for further detail on the estimation strategy.

In this study, I chose two different variables from the controls that fit the above criteria, one of which is more "dangerous," in that the difference is larger pre-matching: namely gender and precarious legal status, respectively. In the case of gender, the simulated results show that the effect of such a variable would be minimal through a low selection bias; while precarious legal status does have a larger selection effect.[6] The results of the simulated sensitivity analysis are presented in Table D.7.

Table D.7.: Sensitivity analysis results (positive and negative)

	Negative Shock			Positive Shock		
	1	2	3	4	5	6
Outcome	ATT Baseline	ATT (Gender)	ATT (PS)	ATT Baseline	ATT (Gender)	ATT (PS)
Employed (curr.)	-0.154	-0.156	-0.140	0.069	0.065	0.081
	(0.051)	(0.064)	(0.065)	(0.079)	(0.097)	(0.093)
Employ. (level)	-0.253	-0.244	-0.218	0.189	0.193	0.202
	(0.092)	(0.114)	(0.113)	(0.136)	(0.164)	(0.158)

ATT shown for on common support. N varies given matching strategy used (control vs treated). Columns 1 and 4 show the baseline estimate for the negative and positive shock, respectively. Columns 2 and 5 show the simulated ATT if omitted variable follows gender variable's distribution. Columns 3 and 6 show the simulated ATT if omitted variable follows precarious status variable's distribution. All specifications use serial probit matching. Robust standard errors in parenthesis.

[5] For simplicity assume a binary outcome as in the case of the employment variable; however, of course the blocks increase in the case of employment level.

[6] The selection effect for U simulated like gender has around a 0.62 odds ratio, while that for a U similar to precarious status has around a 1.5 odds ratio of being a biased selection.

Columns 1 and 4 show the baseline ATT results (i.e., NN1). Columns 2 and 5 show the resultant ATT with a simulated U similar to gender; while columns 3 and 6 hold the results for a U like precarious status, for the negative and positive shock, respectively. There are very small differences in magnitudes of the ATT with a U simulated in a like distribution to the gender or precarious status variables. These differences are not significant. Overall, I do not find that the presence of a confounder that follows the distribution of either gender or precarious legal status greatly changes the results as compared to the baseline estimated ATT.

Non-parametric robustness: Variation of the model

A different way to model the average treatment effect on the treated, is to use the regression adjustment method. Here the (unweighted) differences between the averages of the treatment - specific predicted outcomes are used to estimate treatment effects rather than the mean difference after matching. The regression adjusted method is a two-step process where first, separate regressions are constructed for each treatment level. Afterwards, taking the differences in the average predictions and restricting it to the means of the treated subjects, yields the average treatment effect on the treated. There are several benefits of running such an analysis. Similar to the ordered probit analysis on the two treatments, both treatments are calculated simultaneously which allows for the standard errors of both treatments and the two-step process to be taken into account directly. Thus, corrections of standard errors are part of the process. Moreover, this method utilizes information on the functional form of the outcome equation to decrease the differences in covariates between matched pairs, where still existent differences could lead to some bias (Caliendo and Kopeinig, 2008), such as in the case of the positive shock.

Table D.8.: RA & IPW results (positive and negative)

	Curr. employed (bin.- any type)	Level of employment
ATT (RA)		
Positive shock (vs control)	0.0402	0.118
	(0.051)	(0.094)
Negative shock (vs control)	-0.244***	-0.382***
	(0.053)	(0.099)
ATT (IPW)		
Positive shock (vs control)	-0.029	-0.026
	(0.135)	(0.271)
Negative shock (vs control)	-0.339**	-0.581**
	(0.135)	(0.271)
Observations	751	750

Regression adjusted and IPW weighted ATT shown for on common support. Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Furthermore, I use an inverse probability weighting (IPW) scheme as a means to further correct for the fact that each respondent is observed only in one of the potential outcomes. Mainly that we do not actually observe the counterfactual but build it through selection into treatment. The IPW estimator uses a two-step approach where first the parameters of the treatment model are

estimated, then the estimated inverse- probability weights are computed. In the second step these weights are used to compute weighted averages of the outcomes for each treatment level. The difference between these weighted averages as concerns those treated is then the estimated average treatment effects on the treated. Similar to the regression adjusted technique, standard errors are corrected.

In both of these models, I find that the original results hold both in sign and significance, see Table D.8. However, the magnitudes of the effects are larger than in the matching methods used before. In as much, results in the analysis could be construed as lower bounds to the effects found.

D.2.2. Reverse causality

In the following I detail the results of the instrumental variable analysis outlined in section 7.5. There is a high degree of association between the (potential) treatment variables and the instruments. Looking at the distribution, seen in Figure D.3 of the instrumental variables and the possible endogenous variable we find that the relation suspected holds. Both instruments have very strong correlations with the possible endogenous variable.

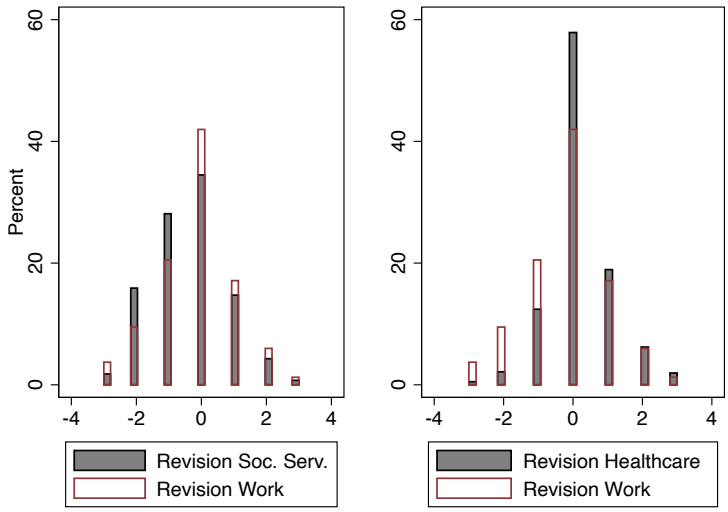


Figure D.3.: Instruments distribution in relation to change in belief access to work variable

The similarity in the distributions indicate that the same learning process that occurs on the German labour market sector is also present in these two institutions.

The relevance assumption can be easily tested by looking at the first stage results, see Table D.9 second panel. There, I do find a positive and highly significant association between the two instruments and the possible endogenous treatment variable.

Table D.9, first panel, presents the test results for validity of these two instruments.

Table D.9.: IV tests

Outcome	Employed (curr.)		Employ. (level)	
Test Statistics	F-stat	P-val.	F-stat	P-val.
Endogeneity				
Durbin test		0.449		0.836
Wu-Hausman test		0.452		0.838
Weak Identification test				
Cragg-Donald Wald F statistic	24.623		24.390	
Stock-Yogo weak ID test critical values	8.68 to 3.92		8.68 to 3.92	
Underidentification				
Kleibergen-Paap (rank) LM statistic		0.000		0.000
Overidentification				
Saargan- Hanson Statistic		0.623		0.504
First stage				
Diff. Acc. to Soc.Serv.	0.098***		0.099***	
	(0.024)		(0.024)	
Diff. Acc. to Healthcare	0.124***		0.121***	
	(0.031)		(0.031)	
N	774		773	

Tests of Instruments using entire treatment variable (-1: negative, 0: neutral, 1: positive) and difference between perceived access at time of arrival and current perceived access. First stage coefficient results shown. Robust standard errors in parenthesis. * $p < 0.10$, **$p < 0.05$, *** $p < 0.01$.

The first stage F-statistic, as calculated by the Cragg-Donald Wald test is above the "thumb rule" of 10 but most importantly it is above all Stock-Yoga critical values. Suggesting that the instruments have enough statistical power to define the possible endogenous variable and are, therefore, not weak. I am also able to reject the null hypothesis that the instruments violate the rank condition, e.g. that the system is under-identified, using the P-Values of the Kleibergen-Paap test. Lastly, the Saargan- Hansan statistic confirms that we cannot reject that the instruments are not correlated with the error terms in the system, hence, ensuring that the system is not over-identified.[7]

Turning to the IV estimate results, see Table D.10 I find that, reassuringly, the sign and significance of the negative and positive updating shock still remain. [8] The IV results, however, show an even a higher magnitude of the effect of receiving the treatment on labour market outcomes compare to the non-IV estimates of column 1 and 3, further bolstering the main analysis. As a robustness to this analysis, I also chose both linear and non-linear models to specify the IV analysis as suggested by Angrist and Pischke (2009). Results remain the same no matter the specification chosen. For brevity I exclude these results here.

[7] I refer to the system as the language if IV estimation comes from literature on systems of equations.

[8] In the main analysis I used more controls to be in line with the estimation of the ATT calculated using the propensity score matching approach in the potential outcome framework. Here I present the marginal effects using a probit model with a reduced number of controls.

Table D.10.: IV results for employment outcomes

	1	2	3	4
	Negative Shock		Positive Shock	
Outcome	(Ordered) Probit	IV	(Ordered) Probit	IV
Employed (curr.)	-0.113***	-0.569***	0.042	0.011
	(0.028)	(0.232)	(0.038)	(0.191)
Employ. (level)	-0.024***	-0.784*	0.011	0.020
	(0.008)	(0.441)	(0.007)	(0.361)
N	826	589	826	536

Marginal effects at means reported. (Ordered) Probit results reported for outcome 1 (part time employment reported). IVs used on treatment outcomes. Controls included: Age, Female, City ID, Network in DE b/f arrival, Rel. &par status in DE, Current health (self - rated), Prec. status, Still in legal process and Yrs since arriving in EU / DE. Testing results can be found in Table D.9. Robust standard errors in parenthesis. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

D.2.3. Re-specifying treatment groups

One concern, is that specifying the difference in beliefs as binary shocks between those who did not update their beliefs and those who did, is incorrect. Therefore, as an exercise in caution, I re-specify the problem not in a treatment framework, but rather as a comparison between groups of respondents. Here, I define four distinct groups those who: thought they would have full access upon arrival and found they did have full access (F-F), thought they would have full access but turned out that they had restricted access (F-R), thought they would have restricted but turned out they had full access (R-F), and those who thought they would have restricted and they were restricted (R-R). In the case of the first and last group beliefs where "correct" in the sense that what was expected occurred. In the second case, respondents downgraded, and in the third case they upgraded. I run a probit model in the case of the employment variable and an ordered probit for employment level, taking into consideration variables added in the main analysis as controls, see Table D.11. Even with this specification, I find that the results are stable with a significant decrease in both employment probability and employment level for the R-R group (negative updating) compared to the F-F group, with no significant difference in the R-F case (positive updating).

Table D.11.: Group results

	(1) Curr. employed (bin.- any type)	(2) Level of employment
Treatment Groups		
R-R	-0.089	0.766
	(0.253)	(0.339)
F-R	-0.605***	0.343***
	(0.201)	(0.126)
R-F	-0.154	0.761
	(0.151)	(0.197)
Controls		
Age at year of interview (years)	0.034***	0.942***
	(0.006)	(0.011)
Female	-0.605***	0.381***
	(0.134)	(0.096)
City ID	-0.265***	0.624***
	(0.070)	(0.074)
Network in DE b/f arrival	-0.108	0.769
	(0.131)	(0.176)
Rel. & par. status in DE	-0.041	0.921
	(0.055)	(0.090)
Educ R @ CO	-0.017	0.979
	(0.041)	(0.071)
Type of employment	0.132***	1.259***
	(0.494)	(0.107)
Ger. lang. level	0.091**	1.192**
	(0.043)	(0.089)
Curr. health (self-rated)	-0.163***	0.788***
	(0.046)	(0.063)
Prec. Status	0.769	1.253
	(0.197)	(0.423)
Still in legal process	0.025	0.988
	(0.193)	(0.329)
Yrs since arriving in DE/EU	0.153**	1.268**
	(0.067)	(0.147)
Constant	0.724*	
	(1.143)	
cut1		
Constant		0.283*
		(0.214)
cut2		
Constant		0.419
		(0.316)
Observations	801	800
Pseudo R^2	0.194	0.157

Probit and Ologit models, marginal effects at means and odds ratios shown, respectively. Robust standard errors in parentheses. Omitted category F-F. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

D.3. Questions

Question on employment level and type:
Now we will talk about you current or future work plans. Are you currently working?

1. Yes, in full time employment, with a contract
2. Yes, in full time employment, without a contract
3. Yes, in part time employment, with a contract
4. Yes, in part time employment, without a contract
5. Yes, in minimal or irregular employment
6. Yes, receiving in company training / doing an apprenticeship or undergoing occupational retraining
7. Yes, doing an internship
8. No, I am not working
9. No answer

Source: adapted from SOEP-IAB-BAMF 2016 p. 155: 147

Questions on perceived access to labour market:
1. At this time, how do you perceive your access to work in Germany? Do you have …
2. At your arrival in Germany, which access to work did you think you would have after one year of stay?

1. Full access
2. Somewhat limited access
3. Very limited access
4. No access at all
5. No answer

D.4. Perceived access distributions by characteristics

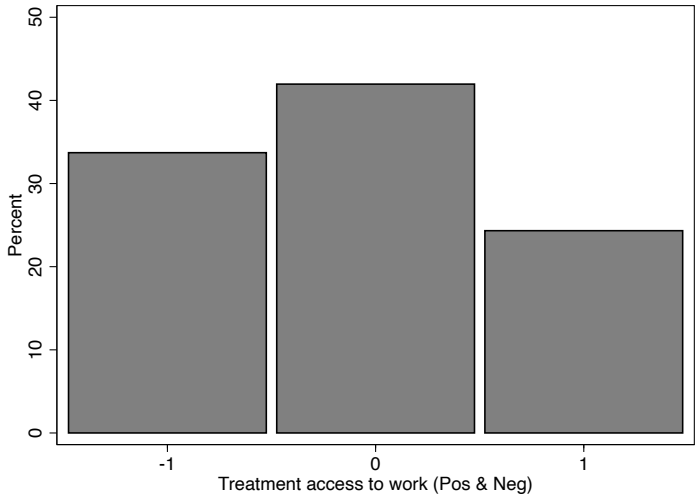


Figure D.4.: Distribution of treatments on labour market

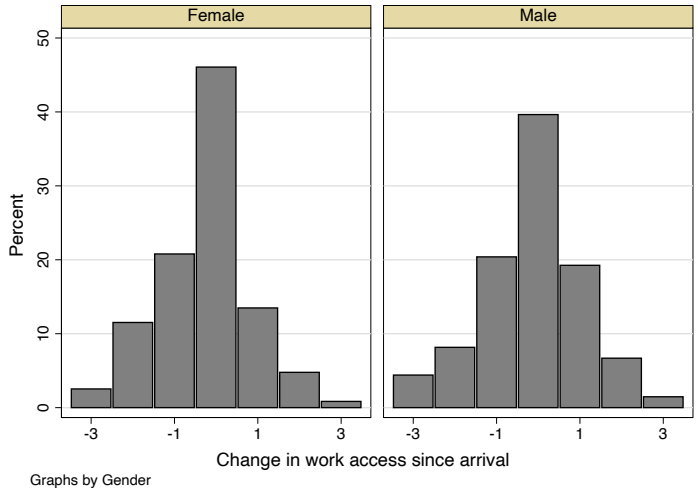


Figure D.5.: Distribution of perceived access to labour market at arrival and interview time by sex

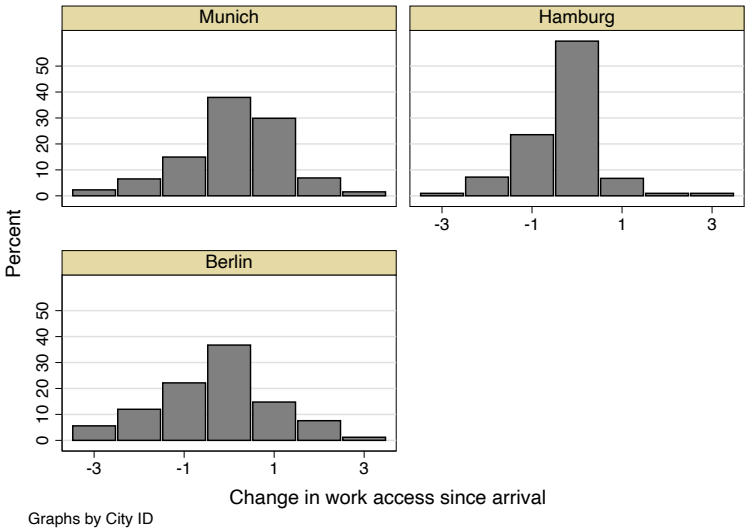


Figure D.6.: Distribution of perceived access to labour market at arrival and interview time by city

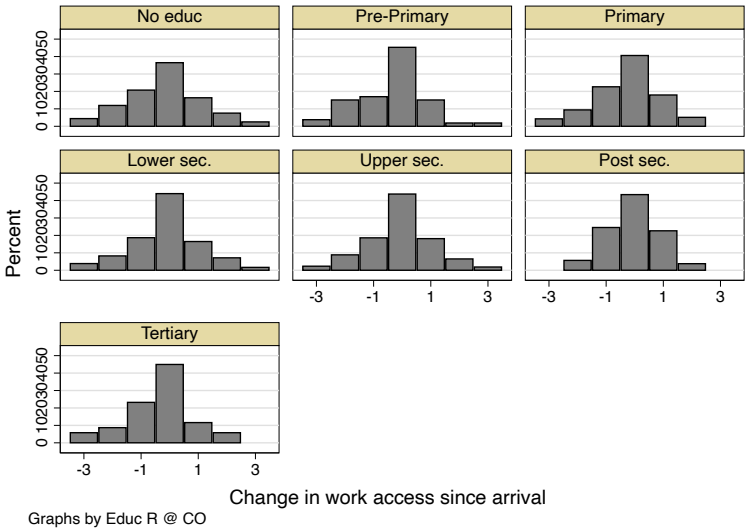


Figure D.7.: Distribution of perceived access to labour market at arrival and interview time by education at CO

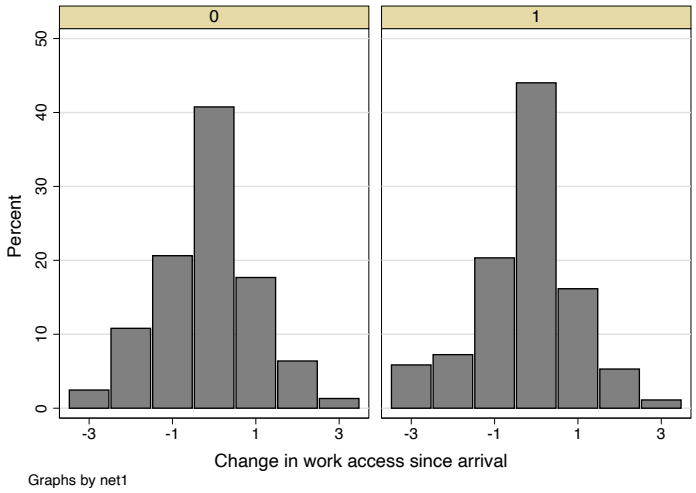


Figure D.8.: Distribution of perceived access to labour market at arrival and interview time by presence of network before arrival

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