Does Recognition of Foreign Qualifications Pay Off?

The German Case

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Contents

List of Tables

List of Figures

1 Introduction

Although Germany has experienced migration flows since the 1960s, it has taken over five decades to face this reality and identify itself as a country of immigration. This late acknowledgment is due mainly to recent migration patterns. In the last 15 years, international migration has sharply risen in most European countries and especially so in Germany. One reason for this development is the enlargement of the European Union. Within the European Union, the free movement of workers is a fundamental right that permits nationals of one EU country to work in another EU country under the same conditions. By the end of 2019, around 2.4 million citizens from the new EU states[1] were living in Germany (Kosyakova and Brücker 2021). Moreover, Germany has received many refugees and displaced persons in the last few decades. During the so-called refugee crisis, around 1.5 million people came to Germany. Only seven years later, a further one million people fled to Germany from the war in Ukraine. At the same time, Germany is increasingly seeking to attract skilled labor, the demand for which has also been rising from year to year. In 2022, around 70,000[2] people moved to Germany from non-EU countries under rules for skilled workers (Graf 2023).

The high numbers of migrants and especially their impact on German society have been the subject of scientific, political, and social discourse. Examples of these debates include recent discussions on the skill needs of

[1] The new EU states are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, Slovenia, Bulgaria, and Romania

[2] 14,225 skilled workers with vocational training (Residence Act, Section 18a) and 55,890 skilled workers with academic training (incl. EU Blue Card) (Residence Act,Section 18b)

German school students due to demographic changes (Stanat et al. 2023), on welfare payments to refugees, or on the introduction of a guaranteed child allowance. The last example illustrates the significance of immigrants' labor market integration.[3] It shows that Germany is concerned about its capacity to integrate newcomers into the labor market and into German society.

Gaining access to the German labor market can be challenging for immigrants. Some obstacles immigrants face while entering the labor market are related to their limited individual resources. The lack of human capital, social networks, or German language skills is one of the main factors that is thought to explain immigrants' relatively poor labor market integration. Their limited human capital is the most crucial factor influencing newcomers' poor labor market outcomes (Kosyakova and Kogan 2022). Moreover, even when immigrants have acquired qualifications prior to migration, they still encounter considerable difficulties when seeking to enter the national labor market. The institutional characteristics of the German labor market may make it even more difficult for immigrants. The issues may include differences in terms of education and labor-market structure between the country of origin and Germany. In particular, problems with the transferability of foreign qualifications are considered a significant explanation for the problems arising (Chiswick and Miller 2009; Friedberg 2000).

At the same time, Germany is suffering from a substantial shortage of skilled labor. In the middle of 2022, almost half of all companies in Germany reported experiencing a shortage of qualified workers. Because Germany is

[3] In a nutshell, the German finance minister ascribed the high child poverty rate in Germany to immigrant parents' poor labor market integration.

currently experiencing a depressed labor market, the skilled labor force deficit has fallen by 10%. However, given Germany's aging society, experts expect the labor force to shrink by 7.5 million by 2034 (Klinger 2020). The paradox is that while the labor force potential is shrinking, the aging population is increasing demand for skilled labor in particular sectors, i.e., the care/nursing and STEM sectors. These are the sectors that require the most training and education.

Yet, despite the demand for skilled labor, Germany has failed to capitalize on the high immigration rate in the last few years. A "brain waste" of the immigrant population is underway—and one of the main reasons for this is the difficulties faced by immigrants in getting foreign qualifications recognized or valued by German employers. As empirical evidence shows, even immigrants with qualifications perform poorly in the German labor market (Kalter and Granato 2018). The last wave of migration in Germany after the beginning of the Ukraine war highlights these integration policy problems. Relatively highly educated Ukrainian immigrants to Germany have the lowest employment rate in European comparison (Thränhardt 2023): In fact, only 18% of them are employed and many have struggled to find jobs matching their education and skills (Kosyakova, Brücker, et al. 2023).

Of course, Germany has made considerable efforts in recent years to facilitate newcomers' transitions into the German labor market. For instance, since April 2012, immigrants have been able to submit their foreign qualifications for legal assessment and recognition. Recognition means a foreign qualification is legally equivalent to a German one. This is essential for immi-

grants wishing to work in a regulated profession in Germany. Only individuals with German occupational diplomas or recognized foreign qualifications are entitled to work in these occupations. However, recognition of foreign qualifications is also of great importance for nonregulated professions, since employers in any host country, including Germany, are usually not familiar with foreign education systems and thus have trouble evaluating the foreign qualification. On the website of the Federal Office for Migration and Refugees (BAMF), the following information is contained "Having your qualifications assessed can, however, be useful, as this will better enable employers to evaluate your qualifications." (BAMF, 2025, "Background information" section). However, the question arises: how well does the recognition meet its purpose, or, to put it another way, **do German employers rely on qualification recognition?**

This thesis attempts to answer this question. It therefore extends the prior research on the effects of official recognition. It illustrates, first, how the migrant population in Germany has changed over the last decades. Building on this information, it introduces various theoretical foundations that explain the labor force trajectories of the "old" and "new" immigrants. It then empirically investigates the question of whether official recognition improves immigrants' labor market chances using a mixed-method approach. Specifically, by using a field experiment, it examines the mechanisms underpinning immigrants' labor market access in entry-level hiring. Building on the results of this field experiment, I then go one step further and seek to identify whether other factors, namely the candidates' wage expectations, are more

important than official recognition letters. Here, I have used an experimental survey approach. I have also combined this survey with a qualitative method that provides exciting insights into employer's views on recognition letters or foreign qualifications in general. These insights are crucial in contextualizing the quantitative results. In addition to analyzing the effects of recognition in hiring situations, the thesis focuses on the short- and long-term effects of recognition regarding employment rates, wages, and socioeconomic status. The analyses are based on the new data provided for various immigrant groups.

In the following, I briefly summarize the thesis's chapters. In Chapter 2, I contextualize the thesis's topic by describing the changing German immigration population. It describes the characteristics of the German education system and labor market and the introduction of the Recognition Act as well. Chapter 3 presents theoretical models, beginning with the human capital theory and followed by signalling and credential theory. Chapter 4 presents prior research on recognition of foreign qualifications, while Chapters 5 to 10 present the empirical part of the thesis. The empirical analysis starts with statistical evidence gathered from a natural setting, as discussed in Chapter 5. In this chapter, I outline the research design and present the results of the field experiment. I demonstrate significant differences in employment prospects between candidates with official recognition and those without it. Contrary to common expectations, candidates without recognition actually achieved better employment outcomes than those who provided the recognition letter[4]. Chapters 6 and 7 focus on the perspectives of employers and

[4]I use the term recognition letter, recognition statement and letter of equivalence in-

involved shareholders. Chapter 6, in particular, looks at how employers perceive employees with recognized qualifications. Chapter 7 presents opinions on the subject from the shareholders' perspective. Chapter 8 explores hiring intentions. This investigation aimed to complement the results of the field experiment by offering additional insight into employers' anticipated wage expectation. The aim of this study was to determine whether hiring preferences depend on candidates' wage expectations. Chapter 9 examines the empirical results from Chapters 5 and 8 by analyzing the mechanisms that explain why hiring behavior deviates so significantly from hiring intentions. Chapter 10 shifts the focus from employers' perspectives on hiring applicants with and without recognition to the professional careers of this candidates. I demonstrate, by analyzing all available data on this topic, that although recognition does not necessarily enhance employees' chances of being hired. Instead, it leads to qualitative improvements in their employment, particularly in terms of wages and occupational status. The thesis ends with a discussion of the central findings in Chapter 11. This chapter also outlines the limitations of the thesis and makes suggestions for future research.

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2 Background

2.1 Germany's Changing Immigration Landscape

All European countries, particularly Germany, have experienced an influx of immigrants in the last two decades. There are a number of factors that have influenced this. First, at a broader EU level, the enlargement of the European Union has granted citizens of new member states the right to live and work in any EU country and thus boosted immigration to many EU countries, including Germany. Second, the so-called refugee crisis in 2015 brought many more immigrants to Germany. Third, and finally, Germany has made efforts to recruit high-skilled immigrants from non-European countries. As a result, the composition of immigrants in Germany has changed dramatically.

Until well into the 1990s, the foreign population in Germany was primarily dominated by the so-called *guest workers* and their descendants. Historically, it might be considered the first migratory wave after World War II. Due to the *Wirtschaftswunder*, or "economic miracle" in the aftermath of the war, West Germany was experiencing a dramatic worker shortage. It consequently started recruiting foreign workers from other countries, mainly from Southern Europe. During the 1950s and 1960s, West Germany signed several bilateral recruitment agreements with Italy (1955), Spain (1960), Greece (1960), Turkey (1961), Marocco (1963), Portugal (1964), Tunisia (1965), and the former Yugoslavia (1968). This agreement allowed German companies to recruit industrial-sector workers, mainly with few or no qualifications, for a limited time. Thus, the program was considered temporary. In 1973,

the German government halted further immigration due to the oil crisis. Nevertheless, over the subsequent 20 years, about 14 million guest workers migrated to Germany. Many of the guest workers, about 11 million, ultimately returned home (Franz 1995) but considerable numbers also stayed: At the time of the recruitment stop, Germany had a foreign population of about 4 million (Statistisches Bundesamt 2019), compared to 700,000 in 1960 (Geißler 2014). Family reunification in the following years brought the foreign population to 5 million by the end of 1980. Because the guest workers were, in a sense, "negatively selected"—they were unskilled workers primarily intended to do hard manual work—these immigrants always had lower occupational positions (Granato and Kalter 2001).

Following the fall of the Iron Curtain, immigration to Germany was dominated by two groups: refugees from Balkan countries and so-called *(Spät-)Aussiedler*, who were people of ethnic German ancestry who lived in Eastern Europe and the former Soviet Union. Due to their German ancestry, members of the (Spät)aussiedler group became German citizens upon arrival in Germany. This was not the only privilege enjoyed by this group: They were entitled to benefits like language courses and the recognition of foreign skills (Münz 2004). Between 1987 and 1994, with the peak in 1990, when almost 400,000 (Spät)aussiedler immigrated, around 1,870,840 people from this group resettled in Germany. The number of resettlements was much lower before 1987: From 1950 to 1987, only 1.4 million members of this group resettled in Germany. After 1995, migration rates for this group consistently dropped, with the numbers being in the four-figure range since

2006. In total, 4.5 million (Spät)aussiedler migrated to Germany between 1950 and 2022 (Bundesverwaltungsamt 2022). Since the vast majority of them moved permanently and few returned to their country of origin (Hirsch et al. 2014; Kuhlenkasper and Steinhardt 2017), they are considered a somewhat less selective immigrant group with regard to education. Survey results show that the educational distribution of (Spät)aussiedler aligns closely with that of the German population. For instance, Koller (1997) reported that 17% of pre-1992 immigrants in this category[5] have higher degrees. Konietzka and Kreyenfeld (2001) reported that 15% of the group have tertiary degrees, compared to 20% of native-born Germans. Liebau (2011), reporting as part of the "Labor Market Integration: Aussiedler and Jewish Immigrants from the Former Soviet Union in Germany and Israel" project, found that 16% of (Spät)aussiedler from the FSU have tertiary degrees. According to Hirsch, Jahn, Toomet, and Hochfellner (2014), the range of the proportion of (Spät)aussiedler with tertiary degrees ranges from 16% for those from Romania to 7% for those from the former Soviet Union (FSU). However, the latter study focuses on full-time employed individuals.

As noted above, there was another key immigrant group in this period: Refugees from ex-Yugoslavia, who fled to Germany from 1990 to 1994. According to UNHCR, Germany granted protection to 350,000 refugees (Lederer 1997) from ex-Yugoslavia, mostly from Bosnia-Herzegovina, during this period. By the end of 2001, only 19,227 refugees from Bosnia and Herzegovina were still living in Germany (Bade and Oltmer 2004). There is almost no data available on the educational distribution within this immigrant group.

[5]The number focuses only on the pre-1992 Aussiedler group

One study with the group in the sample reported that 17% of male and 24% of female refugees had tertiary degrees (Liebau and Salikutluk 2016). However, the proportion refers to all refugees who migrated to Germany between 1990 and 2010 and therefore is less reliable in regard to refugees from ex-Yugoslavia.

In the first decade of the 21st century, immigration flows to Germany were dominated by two sources: immigration from the member states of the European Union, especially from the new member states, and refugee migration. Since the EU's Eastern enlargement and the extension of the right to freedom of movement of labor to citizens of the Eastern European countries, citizens of these newcomers states have dominated Germany's immigration figures; however, there have been differences depending on the country of origin. In April 2011, after seven years of transition restriction, workers from eight Eastern European countries (Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Slovenia, and Hungary) became entitled to move to Germany without further restrictions. Romania and Bulgaria (the EU-2) followed in 2014; Croatia did so in July 2015. Although, migration flows from Poland dominated for a long time, migration flows from Romania now outnumber those from Poland. Internal EU immigration surpasses all other migration types,[6] with about 480,000 immigrants moving to Germany in 2022. Yet, due to high return migration, net migration, at 83,960, is relatively low (BAMF and BMI, Migrationsbericht 2023, 2025). Between 2011 and 2022, net migration from these countries comprised in total 1.9 million

[6]The year 2016 and 2022 were exceptions: More non-EU migrants, primarily refugees from Syria and Ukraine, respectively, came to Germany in these years

immigrants (Statistisches Bundesamt 2024). EU immigrants' qualifications depend on the country of origin. Immigrants from "traditional" EU countries (EU-15) are better qualified, with up to 60% having tertiary degrees, while the numbers for immigrants from the EU-10 are a little over 20%. Immigrants from Bulgaria and Romania have the lowest qualification level of the "newcomers"; around 18% have tertiary degrees (Seibert and Wapler 2020).

Yet, despite this EU free movement agreement, Germany has failed to meet its demand for skilled workers. Therefore, it has increased efforts to encourage immigration by highly skilled professionals from outside the EU. Germany has implemented various immigration programs, like the Green Card, the EU Blue Card, and special programs for researchers to attract skilled workers. And although skilled worker migration is increasing year after year, few immigrants to Germany belong to this group. For instance, only 13,137 EU Blue Card holders moved to Germany in 2019 (Migration und Flüchtlinge (BAMF) and Innern und für Heimat (BMI) 2020).

The second primary source of migration to Germany—and by far the most significant and most discussed one—is the refugee influx in 2015, also known as Europe's refugee crisis. In 2015 and the following year, more than one million refugees came to Germany to apply for asylum. The 2015 immigration influx to Germany and the EU as a whole was primarily triggered by the civil war in Syria. However, an increase in violent conflicts and political persecution in other regions—combined with a worsening of living conditions in the region's neighboring countries, which still host the majority of refugees—contributed to the surge of forced migration in 2015.

Refugee immigration had begun to rise in the preceding years; from 2012, refugee applications had almost doubled on an annual basis (Migration und Flüchtlinge 2016). Following the EU's agreement with Turkey, refugee flows declined sharply as the Turkish government hindered refugees from crossing the borders to Greece by land or sea. Moreover, the EU agreements made it possible for refugees to be returned to Turkey from Greece. The EU agreement achieved its (dubious) goal; in 2019, only 142,509 applications for asylum were submitted in Germany (Migration und Flüchtlinge (BAMF) and Innern und für Heimat (BMI) 2020).

On average, refugees have lower levels of education than other migrant groups or Germans. Only 11% of refugees have a tertiary degree and only 5% have completed dual vocational training. The latter is hardly surprising, as the relevant countries of origin do not have dual vocational training systems. The majority of refugees either hold diplomas from middle school (23%) or high school (35%) (Brücker, Rother, and Schupp 2017).

At the same time, in 2015, many immigrants from Western Balkan countries tried to migrate to Germany and claim asylum. To get control over refugee migration from those countries, Germany launched the so-called "Western Balkans regulation" in January 2016, which entitles people from non-EU-Western Balkan countries like Albania, Bosnia and Herzegovina, Kosovo, Montenegro, Northern Macedonia, and Serbia to move to Germany for reasons of employment. Moreover, unlike immigrants from non-European countries, immigrants from these countries do not have to hold particular qualifications to take up work in Germany. This new regulation has been

quite effective. In 2019, immigrants from Western Balkan countries made up the largest non-European labor immigrant group (Migration und Flüchtlinge (BAMF) and Innern und für Heimat (BMI) 2020). The new regulation thus demonstrably met the labor demand from German industry and was extended for another three years beyond its initial end date of 2020. Although the Western Balkan regulation allows migration without proof of particular qualification, almost 70% of this group of immigrants do have vocational training, and 10% have a university degree (Brücker, Falkenhain, Fendel, Promberger, Raab, et al. 2020).

In March 2020, Germany introduced the Skilled Immigration Act. This act allows qualified workers without a tertiary degree to migrate to Germany for work. Beforehand, only high-skilled immigrants or those in a high-demand profession could do so. However, visa awards are based on some conditions. Immigrants have to have their foreign qualifications officially recognized. After all, the Skilled Immigration Act is aimed at attracting qualified workers.

In February 2022, Russia invaded Ukraine, forcing about 6 million people, primarily women and children, to flee from their homes. About one million of them have fled to Germany (Migration und Flüchtlinge (BAMF) and Innern und für Heimat (BMI) 2025). Ukrainian refugees differ significantly from the "earlier" refugees; around 72% have a tertiary degree (Brücker, Ette, et al. 2022).

In summary, recent immigration trends have resulted in a diverse group of immigrants with varying levels of human capital in Germany. However, although the immigration population has changed considerably over the last

three decades, it is remarkable that the labor market integration trajectory of immigrants has remained more or less the same (Kogan 2011). The typical wage assimilation theory, primarily based on the Chiswick seminar study from the USA, implies that the initial employment and wage gap closes 10 to 15 years after arrival (Chiswick 1978). However, contrary to corresponding evidence from the USA, the employment and wage gaps do not close completely; even worse, the latter widens for some immigration groups (Berbée and Stuhler 2024). A large part of this gap is assumed to result from barriers to the transferability of immigrants' skills to the host country.

2.2 The Institutional Setting of the German Labor Market

The training system in Germany differs substantially from that of most other countries. There is a strong link between the education system and the labor market in Germany (Shavit and W. Müller 1998). Germany's distinct vocational education and training system, namely vocational education and training (VET), a systematic combination of training and working, is considered particularly relevant for a successful labor market transition. Although there are three educational tracks—tertiary/higher education, dual VET, and full-time vocational schools, about 46 % of the German population[7] has a dual VET diploma obtained in Germany (Statistisches Bundesamt 2021). In 2022, almost 20%[8] of all German companies provided dual vocational training

[7] Older than 15 years old

[8] In companies with over 200 employees, 75% have provided dual vocational training.

in 327 occupations, which trained 1,22 million new apprentices (Berufsbildung 2024). Thus, dual vocational training helps ensure a steady supply of skilled workers. Employers are consequently heavily involved in organizing vocational training and are well-informed about the skills obtained.

The German educational system not only has this relatively distinctive training regime; it is also characterized by relatively strong stratification and standardization, especially compared to the systems in English-speaking countries. Standardization in this context refers to "the degree to which the quality of education meets that same standard nationwide" Allmendinger (1989, p. 233) (1989). Moreover, the German educational system is highly stratified as well. Stratification refers to the extent and form of tracking in the educational system (W. Müller 2005). Depending on their grades, German pupils are sorted very early, after the 4th grade,[9] into different school types—*Hauptschule, Realschule, and Gymnasium*—which usually strongly determine an individual's further educational and training paths. Both standardization and stratification affect the informational value of educational credentials.

For this reason, German employers heavily rely on the signalling capacity of educational credentials (W. Müller and Shavit 1998). As German employers are directly involved in VET training, they are also familiar with the skills provided in that training. Thus, they have very limited uncertainty related to VET credentials. Moreover, in this occupational-oriented system, VET credential holders' skills can be immediately utilized without further

[9] In Berlin and Brandenburg after 6th grade

training. However, this particular education system, which favors local qualifications, may increase the disadvantages faced by immigrants with foreign qualifications, as the screening of candidates increases costs for local companies. On the one hand, German employers are not familiar with immigrants' qualifications; on the other hand, due to the different training systems, they cannot use their skills to the same extent as a German qualification holder would be able to. All the listed factors matter for the matching process as they directly impact how costly it is for the employer to find the most productive employee.

2.3 Recognition of Foreign Qualifications

Due to Germany's unused immigrant human capital potential and skilled labor market shortage, the country is increasingly committed to making it easier for immigrants to access the national labor market. In 2012, Germany introduced a Recognition Act allowing all immigrants to submit their foreign qualifications for legal assessment and recognition. Beforehand, the regulations on recognition were diffuse. Recognition either depended on the individual's profession or the immigration status. For instance, while all immigrants were entitled to the recognition of academic credentials, like school diplomas, only a distinctive immigrant group, the *(Spät)aussiedler* group,[10] were entitled to have their foreign occupations recognized as well (Englmann and M. Müller 2007). After 2005, recognition also differed from profession to profession. In regulated professions and occupations, EU citizens are entitled

[10]Persons of German descent from the successor states of the former Soviet Union and other Eastern European states

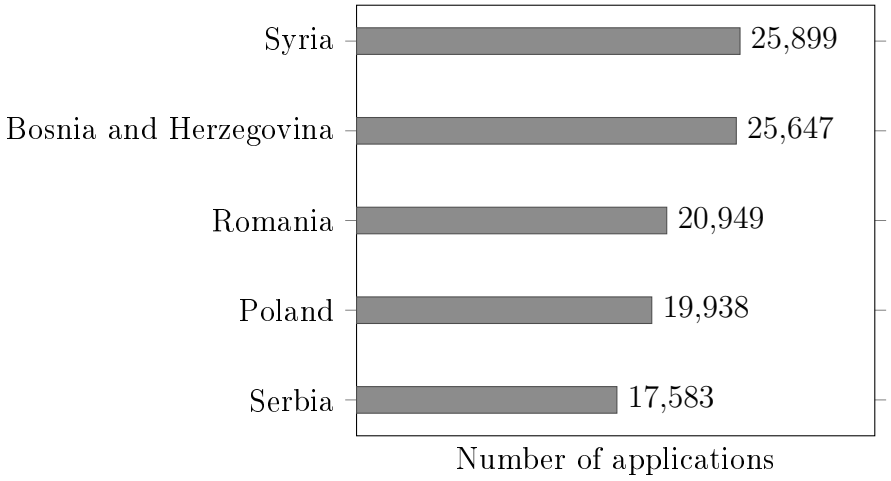
to an automatic recognition procedure[11]. Consequently, last but not least, the new Recognition Act also aimed to simplify and standardize official procedures (Bundesministerium für Bildung und Forschung and Bundesinstitut für Berufsbildung 2014).

Since April 2012, all immigrants, regardless of their immigration status, have been entitled to legal assessment and recognition of their qualifications. Moreover, immigrants can now apply for recognition in their country of origin before immigrating to Germany. However, as can be seen from Figure 1, which illustrates the top five countries of training application, the countries of application reflect the migration process in Germany. While, in the past, the procedure for recognizing foreign credentials was linked to the profession in question, the new regulation grants a general right to an assessment of equivalence in nonregulated occupations in the dual system. Immigrants wishing to work in Germany can now apply for recognition of their foreign qualification in 600 occupations, including 84 regulated professions. To sum up, then, the recent amendments have aimed to detach immigration status from specific occupations and to create equality between regulated professions and nonregulated occupations.

However, the application process is still challenging (see Figure 2), particularly for newcomers. German professions and occupations are regulated by different authorities. The authorities responsible for administrative implementation within unregulated occupations are the IHK FOSA (Foreign Skills

[11]Although immigrants from third countries, states outside the EU, the EEA, and Switzerland, were entitled to get their qualifications recognized, they rarely succeeded due to limited access to compensation.

Figure 1: TOP 5 countries of training applications 2012–2022

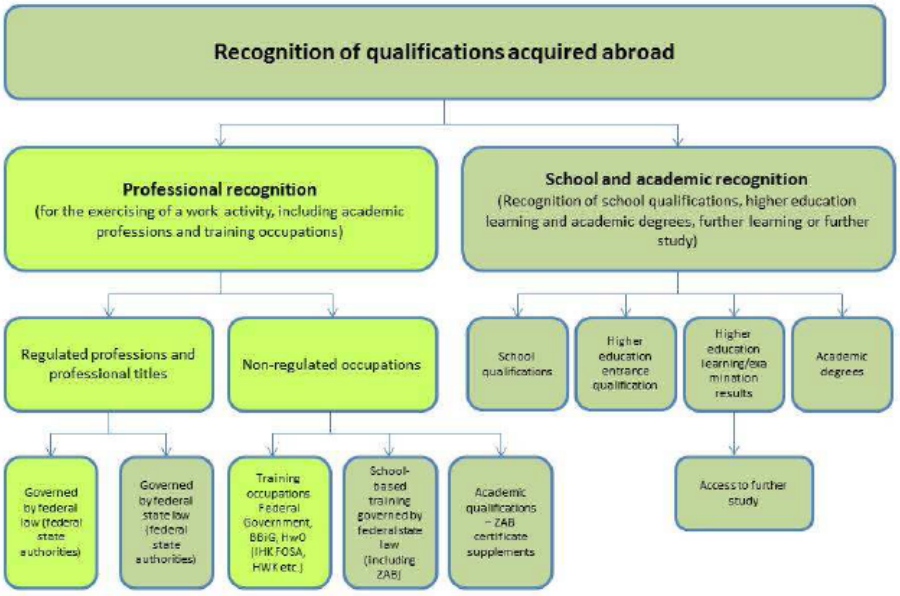


Source: Report on the Recognition Act (2023)

Approval Competence Centre of the Chambers of Commerce and Industry) and the locally organized chambers of crafts (Handwerkskammern, HWK). Authorities in Germany's 16 federal states are usually responsible for recognizing foreign qualifications in regulated professions. However, there are some exceptions. Although the profession "engineer" is a nonregulated occupation, "engineers" without recognition cannot use the title *Ingenieur* or *Ingenieurin* in Germany. The Federal Chambers of Engineers grants permission to use the title of Ingenieur or Ingenieurin in a recognition process.

Yet, the number of applications for foreign recognition is not the sole determinant of the success of this procedure; the outcome of the recognition procedure is at least as important. Here, it is important to note that not all recognition applications necessarily lead to successful recognition. Imagine a situation in which there are substantial differences between the foreign and German reference qualifications. In such a case, there are two further possible

Figure 2: Recognition Paths



Source: Report on the Recognition Act (2014)

outcomes, *no equivalence* or *partial recognition* in nonregulated occupations. In the case of partial recognition, the recognition letter describes the missing training contents and provides suggestions for compensation measures that, if completed successfully, would lead to full recognition. In regulated professions, there are only two outcomes: *no equivalence* or *full recognition*. If there are substantial differences between the foreign and German reference qualification, the applicant is notified, similarly to the procedure for nonregulated occupations, of the required compensation measures. The difference in such cases is that the applicant must complete the compensation measure to practice their profession; this is not the case for people in nonregulated professions. In 2022, 47% of recognition procedures ended with full equivalence of qualifications (Bundesministerium für Bildung und Forschung and Bun-

desinstitut für Berufsbildung 2024). About 51% ended either with partial recognition, in the case of a nonregulated profession, or with a requirement notice for compensation measures in regulated professions. What is striking is that less than 2% of all recognition procedures ended with no equivalence.

One crucial amendment made by the new Recognition Act is the opportunity to take occupational experience or training certificates into account if differences in formal qualifications between the foreign occupation and German reference occupation are supposed. Another important aspect is the opportunity to take the *skills analyses* into account if necessary documents relating to vocational qualifications are missing or incomplete. Skills analyses, which take place most often in craft occupations, can be based on work samples, professional discussions, or trial work in a company. This opportunity may be particularly salient for distinctive migration groups, like refugees, where the necessary documents cannot always be obtained due to dangerous situations in the home country. Between 2012 and 2022, 1,491 skills analyses were undertaken according to the official statistics (Bundesministerium für Bildung und Forschung and Bundesinstitut für Berufsbildung 2024).

3 Theoretical Approaches to Explaining Labor Market Disadvantages

3.1 Human Capital

Historically, research investigating immigrants' labor market disadvantages has focused on the effect of differences in human capital. The concept of "human capital," which emerges from the seminal work of Becker (1962), refers to all individual's productive characteristics, which are primarily acquired through schooling and on-the-job training (Becker 1962). In a study that has become the workhorse of labor economics, Mincer (1974) modeled the theoretical assumption of human capital theory in the wage equilibrium. The mechanism at work here considers both factors, costs, and payoffs. Investment in schooling or training is regarded as a cost by individuals, while earnings are regarded as payoffs. Thus, additional years spent in school or training increase individuals' earnings.

Therefore, according to human capital theory, the differences between individuals in labor market outcomes can be explained by their human capital (Becker 1962). Following this assumption, immigrants' labor market disadvantages in the host country are thought to be primarily based on differences in human capital. Immigrants, at least in the postwar era, are considered to have a lower level of schooling than natives. This pattern can be observed in many Western countries. For instance, immigrants born outside the USA had an average of 11 years of schooling compared to 12 years for natives

(Chiswick 1978). This is also the case in Germany. As previously described, the postwar German government recruited unskilled migrants, most of whom had "invested" little in human capital. Thus, the labor market inequalities experienced by guest workers can be mainly explained by differences in years spent in education (Dustmann 1993).

3.1.1 Heterogeneity in the Returns to Human Capital

Yet, human capital differences can only partially explain immigrants' labor market disadvantages. As Dustmann(1993) has shown, keeping all factors equal, the effect of an additional year of schooling differs substantially between foreign-born individuals and natives in Germany. Moreover, as seen in the migration overview section, migration patterns have changed considerably in Germany over the past 30 years. But despite the fact that "newer" immigrants are better qualified on average, they still perform poorly on the German labor market (Kogan 2011). One prominent observation is that human capital acquired abroad is not rewarded to the same extent as domestic human capital. Although researchers had theoretically postulated this effect for some time (Chiswick 1978; Dustmann 1993), empirical evidence in support of this assumption only emerged in the late 1990s, in works that distinguished between human capital (i.e., schooling and labor market experience) acquired abroad and in the host country. Prior to this, most studies treated immigrants' human capital from different countries as perfect substitutes (Basilio, Bauer, and Kramer 2017). In her seminal analysis, in which she distinguished between human capital acquired abroad and in the host

country, Friedberg (2000) found evidence, in the case of Israel, that foreign qualifications had lower economic return than domestic human capital. Similar patterns emerged in USA (Bratsberg and Ragan Jr 2002), Canada (Schaafsma and Sweetman 2001) and Spain (Sanroma, Ramos, and Simon 2015). Basilio, Bauer, and Kramer (2017) have provided similar empirical evidence for Germany as well.

Most researchers seeking to explain the lower economic return to human capital acquired abroad have cited problems with the transferability of human capital across different labor markets. However, they remain fuzzy about the exact mechanisms underlying the assumed transferability problems (Friedberg 2000). Some researchers have been more explicit and explained the differences as the (real or perceived) differences in the quality of foreign education or as being caused by their imperfect transferability (Friedberg 2000; Sanroma, Ramos, and Simon 2015). Qualifications obtained in developing countries are usually ascribed lower education quality.

At the same time, the incompatibility arises from the mismatch between education acquired abroad and the domestic labor market requirements (Friedberg 2000). Transferability problems, although often receiving less attention, can also arise from institutional differences in education systems (Damelang, Abraham, et al. 2019), which have an impact on labor market. For instance, Germany's vocational training system, also known as a dual system of vocational training, differs significantly from most countries as it involves substantial on-the-job training. Graduates of the German vocational education system thus obtain occupational-specific knowledge that

can be transferred between firms. Consequently, the school-to-work linkage in Germany is very strong (Kogan 2016). This means that holding German vocational training credentials contributes to a higher occupational match in Germany. Although the German dual system is internationally highly regarded, it represents a real obstacle for immigrants. So even if the outcomes are the same, these two factors imply two different mechanisms, as Tibayev and Hellgren (2019) have correctly illustrated. If the quality of education, and therefore the "assumed" skills, are lower in the country of origin, the lower economic returns that immigrants receive would be, according to human capital theory, justifiable.

Using a clever research design, Kanas and van Tubergen (2014) have attempted to disentangle the two mechanisms. Their paper compares the economic outcomes of two similar immigrant groups in the Netherlands—Moroccans and Turks—regarding the quality of education. Given that Morocco was a French colony, Moroccan education is more similar to Belgian education and is therefore expected to be more transferable than Turkish education. The authors find that Moroccan immigrants reap greater economic rewards than Turks in Belgium. They interpret this result as support for the assumption that the similarity of educational systems can be salient for labor market integration, regardless of the educational quality.

So far, I have cited research that understands educational credentials as proxies for skills. However, it is important to distinguish between labor market disadvantages caused by the (limited) transferability of qualifications or caused by the incompatibility of skills (Lancee and Bol 2017). Using data

from PIAAC that provide assessments of individuals' actual skills, Prokic-Breuer and McManus (2016) separated formal qualifications from skills to test the skill heterogeneity explanation for immigrants with the same level of education, concluding that there are remarkable differences in actual skills between immigrants and natives. By contrast, using the same data, Lancee and Bol (2017) found that non-Western immigrants with non-Western foreign qualifications were at a disadvantage, even after controlling for skills. Consequently, they argue, "... that being educated abroad results in lower wages because of not only the limited transferability of skills but also the limited transferability of degrees" p. 691. Weins (2010) has drawn the same conclusion for the Swiss labor market.

3.2 Signalling Perspective

So far, several explanations have been proposed for the lower economic returns experienced by immigrants. Human capital theory can explain why these lower economic returns arise when immigrants have less human capital (measured in years of schooling), when the education obtained abroad is of lower quality (despite the same years of schooling), or when skills obtained abroad have limited transferability. However, what it fails to explain is why this limited transferability of qualifications arises when immigrants and natives have similar skills.

To explain this phenomenon, researchers must understand the circumstances under which employers hire employees. As in any market, there is imperfect information in the labor market. Therefore, the participants

with less information in the labor market allocation situation, usually the employers, try to gain further information on applicant productivity. Following the screening strategy, employers then take educational credentials as valuable information and as a proxy for job seekers' skills (Spence 1973). Given this background, immigrants with foreign qualifications face inherent disadvantages in the labor market. Because (German) employers are usually unfamiliar with foreign education, immigrants' certificates provide less information on their productivity than certificates acquired in Germany. Consequently, German employers are reluctant to hire an applicant with a foreign qualification. Some migration scholars have described this situation, referring to Cains's work (1986), as informational discrimination (Damelang, Ebensperger, and Stumpf 2020; Kogan 2016). Note, as Tibajev and Hellgren (2019) have stressed, risk-averse employers are also cautious about hiring candidates with foreign qualifications even if they do not hold specific beliefs about foreign countries' educational systems.

However, the idea that employers do not hold "beliefs" about a group is difficult to apply to the real world. Many researchers, including Cain, assume that employers to refer to generalizations when facing uncertainty about a candidate, i.e., they use the group's average productivity and apply the expected productivity to the individual candidate (Aigner and Glen G Cain 1977; Phelps 1972). This phenomenon is known as statistical discrimination and likely applies to holders of foreign qualifications. When employers are unfamiliar with foreign diplomas, they might refer to group information. This information can be specific beliefs about foreign countries' education and

perceived group productivity. Thus, if German employers anticipate that foreign education is of lower quality or that holders of foreign qualifications will have lower average productivity, they will apply those beliefs to the foreign candidate.

Note that the literature has not always clarified the distinction between informational and statistical discrimination. Yet, following Tibajev and Hellgren (2019), it is crucial to distinguish between these two types of discrimination [12]. They argue that if employers hold specific (downgrading) beliefs about foreign qualifications, further information, i.e., a certificate of equivalence, should not have any effect. However, Pietrantuono argues that the more information about the candidate is provided, the less beliefs about the group matter (Pietrantuono 2016). Hence, if a foreign qualification is recognized, this official recognition should make candidates easier to assess and render group-related beliefs less valuable. However, as Kogan (2016) has noted, this is only the case if employers rely on official recognition assessments.

Although informational and statistical discrimination cannot be distinguished in the following quantitative results, it will be useful to keep the two mechanisms in mind when contextualizing the data derived from my research.

[12]Note, Tibajev and Hellgren (2019) do not speak about "informational" discrimination. However, the mechanism they describe is equivalent to informational discrimination

3.3 Occupational Closure

The preceding considerations have focused on the (insufficient) human capital[13] or on the (limited) signalling value of foreign credentials as explanations of the labor market disadvantages of newcomers. However, signalling theory cannot entirely explain the mechanism behind immigrants' (dis)advantages in regulated professions. In these occupations, only individuals with appropriate German occupational diplomas or immigrants with recognized occupational credentials [14] are entitled to work. Thus, even if immigrants hold an official but unrecognized credential in a regulated profession and even if this credential had "perfect" signalling value (i.e., employers were familiar with the foreign credential), they would not have legal access to this profession in Germany.[15] Given that about 15% of all employees in Germany in 2011 were members of a regulated [16] profession, the consequences for the German labor market are substantial (Haupt 2016). Note that while the number of regulated occupations has remained stable, the demand for specific regulated occupations like nursing and teaching has increased over time (Rohrbach-Schmidt 2020).

Consequently, more recently, the institutional aspects of occupations have become salient in migration research. Notably, the "credentials approach" has prompted several recent studies to explore the limited transferability of

[13] I consider the transferability problems due to the absence of country-specific skills as insufficient human capital

[14] For EU immigrants in medical professions, the recognition is not necessary (EU-Berufsanerkennungsrichtlinie2005/36/EG)

[15] Note, however, that even if immigrants get their credentials recognized and are thus entitled to work in this profession, employers may still be reluctant to hire them. In such cases, we might say that the signal sent by the recognition process has not been received.

[16] Or licensed

credentials in regulated occupations. According to this perspective, educational credentials can be seen as a closure strategy to limit access to lucrative occupations and rewards (Collins 2019). Credentialism theory focuses on the effects of educational attainment rather than individual skills (Kerckhoff, Raudenbush, and Glennie 2001). Drawing on Weber's (1978) concept of social closure, Weeden extends this reasoning to occupational closure. He identifies five closure strategies: *licensing, credentialing, certification, occupational association*, and *unionization* (Weeden 2002). Immigrants are particularly affected by licensing and credentialing. Other occupational closure strategies like voluntary certification, occupational associations, and trade unions are not dependent on educational credentials.

Licensing is regarded as the toughest of all closure strategies. One mechanism behind it is to restrict the supply of practitioners through the formal educational system[17]. Because licensing is regulated by law, it is illegal to work in a licensed occupation without educational credentials (Weeden 2002). The problem for immigrants is that although they might possess appropriate credentials, these need to be authorized by the state. Thus, to be allowed to work in a licensed profession, immigrants must either have German qualifications or at least have their foreign qualification accredited. However, on the flip side, occupational regulation may alleviate the labor market disadvantages immigrants experience in Germany. Once they have gained access to that occupation through formal recognition, they are assumed to profit from the rewards of that profession. The restriction of the supply of practitioners

[17] There are other mechanisms—increasing diffuse demand and channeling demand—but they are not discussed here, because they are not relevant for foreign educational qualifications.

makes regulated professions something like a monopoly. Moreover, in the German context, other factors may also contribute to higher rewards in regulated occupations. As members of most regulated occupations in Germany provide public services (e.g., nurses, teachers, or police) (Rohrbach-Schmidt 2020) and are therefore particularly valued by society and the state, they are assumed to have higher bargaining power (Haupt and Witte 2016).

Moreover, because the labor market in German-speaking countries is organized by occupations (W. Müller and Shavit 1998), the concept of occupational closure is assumed to be particularly pronounced there (Bol and Van de Werfhorst 2011). In particular, in vocational training, which is very common in Germany, there is a strong linkage between vocational credentials and occupational positions (W. Müller and Shavit 1998). Furthermore, apprenticeships restrict access to occupations through credentials in the same way as licensing does and consequently provide higher rents for those who completed apprenticeships (Solga and Konietzka 1999). Apprenticeships in about 350 occupations are available in Germany (Bol 2014), and credentialing is considered the most common closure strategy. People with specific educational credentials are entitled to access specific jobs or positions. The difference between credentialing and licensing is that credentialing is not regulated by law but enforced through organizational rules, norms, and the hiring practices used by employers, who serve as occupational gatekeepers. By requiring formal educational credentials for access to certain occupations, employers control access and restrict the supply for the particular occupation. As a holder of a German credential is assumed to be able to provide a service at a

particular quality level (Weeden 2002), this can lead to their being preferred by employers and consumers. Therefore, when immigrants join the German labor market, the employer denies them access to the occupation because they do not hold the German credentials that might guarantee a particular level of quality.

A growing body of research provides empirical evidence that immigrants' limited access to occupations is caused by occupational closure. Studies show that immigrants are less likely to work in licensed occupations (Bürmann 2020; Drange and Helland 2019; Rohrbach-Schmidt 2020). However, as previously described, licensing offers a sheltering effect as well. Once they have obtained access to licensed professions, immigrants benefit from higher wages in these professions (Weeden 2002). Moreover, immigrants are thus also protected from wage disadvantages between them and natives, as various studies have shown (see (Gomez et al. 2015) for Canada, (Drange and Helland 2019) for Norway, (Rohrbach-Schmidt 2020) for Germany)[18]. Similar empirical evidence can be found for educational credentials. Rohrbach-Schmidt (2020) have shown that foreign-skilled immigrants are less likely to work in highly credentialed occupations. The only country in which an effect of credentialism on wages has been observed is Germany. Rohrbach-Schmidt (2020) has found a lower wage gap between immigrants and natives. Drange and Helland (2019) did not find empirical evidence for wage convergence, either in credentialed or certified occupations in Norway. However, the differences in effects between the two countries might be due to differences the countries

[18]There is also empirical evidence that the sheltering effect applies to Black minorities in the USA (Redbird 2017)

display with respect to the strength of the relationship between the education system and the labor market.

From the preceding discussion, it is evident how official recognition facilitates immigrants' access to licensed or highly credentialed professions and consequently increases their monetary rewards. In the case of licensed occupations, access can only be granted through a certificate of equivalence. In a certified occupation, the official recognition provides further information regarding the significance of the certificate. Moreover, since it is the professional organizations that issue the recognition, these also signal a credential holder's competence.

4 Prior Research on Recognition of Foreign Qualifications

The research on the recognition of foreign qualifications is, to this day, limited. The scarce empirical evidence is due to structural differences in the countries' labor and educational systems. For instance, in most countries, official recognition is limited to regulated occupations. Yet, as the recognition of foreign qualifications is mandatory in regulated professions, no clear signalling effect in terms of reducing uncertainty can be derived in such cases; instead, what is evident is the effect of overcoming occupational closure. Moreover, in some countries—e.g., Australia—recognition of qualifications is mandatory in some visa categories. Therefore, the effects of recognition found based on data from these countries are biased due to the selection.

Since there is another mechanism at work between regulated and nonregulated occupations, in the following, I only focus on case studies in which recognition is not mandatory or limited to regulated professions. To the best of my knowledge, Kogan (2012) was the first to analyze the recognition effect in Germany. In a cross-section analysis, she looked at whether official recognition contributes to better labor market outcomes in terms of employment rates, occupational status, and employment rates in so-called PTM[19] industries[20]. To control for self-selection, she applied the propensity score matching method. The study showed that the successful recognition of foreign qualifications facilitates immigrants' incorporation into the labor

[19]PTM stands for professional, technology, and management
[20]For the exact operationalization, see Kogan (2012)

market. However, it is limited by the fact that no causal relationship can be derived since there is no information on whether employment is followed by recognition or recognition by employment. Kogan (2012) assumes the immigrant goes through the recognition process directly after arrival and takes employment afterward. However, workers with foreign qualifications often seek recognition during employment to improve professional career (Ekert et al. 2017). Moreover, the results have limited transferability to other immigrant groups since the survey focuses only on immigrants from the former Soviet Union. Finally, one group considered in the study—namely the *Aussiedler*—is considered a more favorable immigrant group regarding citizenship, the right to occupational recognition and German language skills. As a result, the recognition effect cannot be applied to other immigrant groups.

Damelang (2020) conducted a survey experiment—a factorial analysis—to answer the question of whether recognition of foreign qualifications improves immigrants' chances of being hired in Germany. The applied research design is unique as it allows the researchers to derive a causal relationship. Moreover, it tests the signalling effect of recognition in the hiring situation. Damelang (2020) concluded that the recognition of foreign qualifications improves immigrants' chances of being hired. However, employers still do not consider foreign credentials, even though they are recognized by official institutions as equivalent to German qualifications. Notice, although survey experiments are well suited to measuring attitudes (Auspurg and Hinz 2015), they also come with some limitations when it comes to measuring hiring de-

cisions. The obvious one is that it measures hiring intentions rather than employers' behavior. Indeed, analyses showed that discriminatory behavior is only apparent in the field experiment approach but not in the survey experiment (Pager and Quillian 2005; Wulff and Villadsen 2020). It is reasonable to assume that in a hiring situation, the costs of the action, that is, hiring the wrong person (Treischl and Wolbring 2022) play a more significant role than they do for hiring intentions. Moreover, the respondents must know about the question topic to derive unbiased estimates. This is not the case here: Most employers are not familiar with the recognition process (Bundesministerium für Bildung und Forschung and Bundesinstitut für Berufsbildung 2014). Therefore, this may contribute to a higher cognitive load (Sauer et al. 2011) and in turn affect response consistency. What's more, the survey experiment does not provide an official certificate of equivalence. Since the content of the certificate of equivalence is crucial for the signalling effect, the anticipated signalling effect is not present in the factorial survey experiment.

Another study (Brücker, Glitz, et al. 2021) that also focuses on the effect of occupational recognition uses the novel 2013 IAB-SOEP Migration Sample (M1). The study shows that immigrants' employment prospects are more favorable in Germany if the immigrants hold a certificate of equivalence (Brücker, Glitz, et al. 2021). However, the results also point to significant drawbacks, one of which is the lack of information on the occupation in the country of origin. For instance, it is unclear whether the occupation in question is regulated. The authors of the study (Brücker, Glitz, et al. 2021) tried to overcome this limitation by looking at respondents' occupations in Ger-

many. However, this approach only considers employed individuals. There is no information for respondents who have never been employed in Germany; therefore, the employment rate is biased.

The positive effect of official recognition is also evident in countries other than Germany. Studying Switzerland, a country with a comparable educational system and recognition process to Germany, Pecoraro and Tani (2023) have recently provided empirical evidence on both official recognition and the way in which immigrants‘ skills are being utilized in the Swiss labor market. They found that holding a "certificate of equivalence" enables foreign-qualification holders to utilize their qualifications to as much effect as those acquired in the host country. However, the study has a similar limitation to the Bruecker (2021) study; it does not control for regulated occupations. Moreover, the study focuses on a subjective measure of utilization, which may deviate from the objective measure. Finally, it is unable to show whether official recognition translates into earnings as well. Although subjects perceive themselves as being adequately qualified for their current job, they might be paid less than those with Swiss qualifications.

Another study focuses on the yields of formal recognition in Sweden (Tibajev and Hellgren 2019). Like most of the other literature, the study shows the positive effects of recognition on employment and wages. What is unique about this study is that it focuses exclusively on individuals who have obtained formal recognition in nonregulated professions. It therefore provides empirical evidence on the "true" signalling effect. Yet, although the study employs a promising methodology, it has a weakness as well: it only

focuses on individuals who eventually had their foreign qualifications recognized. The control group, those who did not get their credentials recognized, is not included. Consequently, the effects may be biased. Moreover, Sweden's recognition practices, educational institutions, and labor market differ from those in Germany. Thus, the effects cannot be extrapolated to Germany.

5 Sending the Right Signal?: Recognition of Foreign Qualifications and Immigrants' Chances of Being Hired

Gaining recognition of foreign skills—or, more specifically, being awarded a letter of equivalence—significantly impacts the hiring process, especially in the initial stage of the selection process, when potential employers have the highest uncertainty. Recognition minimizes this uncertainty by providing additional information on foreign qualifications. However, a letter of equivalence does not just inform employers about a foreign qualification; it also compares the foreign qualification with the corresponding German qualification. If the assessment is positive, a letter of equivalence is issued, indicating that the candidate with full recognition is equally well qualified as a German-trained candidate. Therefore, a candidate with recognized foreign qualifications is entitled to enter the profession and be paid as a skilled worker.

However, it is still unclear how German employers react to letters of equivalence. On one hand, the letter of recognition provides further information on foreign qualifications, which should diminish the uncertainties around the qualifications. On the other hand, the letter of equivalence signals that an employer should hire and pay the candidate as a professional.

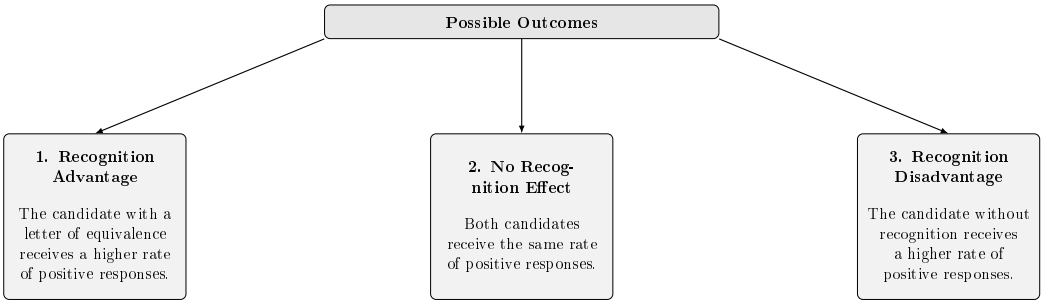
In hiring situations, particularly in the selection process, having a recognition letter can significantly influence German employers' decisions. This

means that if a German employer is looking for a skilled employee and is relying on the informational value of the letter of equivalence, the candidate with the recognition letter should receive more invitations to an interview than the candidate without a recognition letter. However, the recognition letter itself may not be the reason why the candidate with the recognition letter receives more interview invitations; employers may assume they are more motivated and therefore more productive.

To measure the influence of the recognition letter on the hiring decision, I have adopted an experimental design to effectively isolate the causal influence of the letter of equivalence. I use the correspondence test method, which is critical in answering whether the equivalence letter enhances immigrants' chances in the initial selection stage. This method entails sending fictitious resumes with (experimental group) and without recognition (control group) in response to actual vacancies to test the impact of the recognition letter on the chances of being called back for an interview. By adopting this approach, I can gain conclusive evidence of the role of recognition letters in shaping labor market outcomes. The experiment aims to answer the following central question: **How do German employers respond to a letter of equivalence in recruitment situation?**

There are three possible outcomes of the experiment (see Overview in Figure 3). If the results pointed to the first outcome, this would confirm the assumption that the candidate with the letter of recognition had better hiring chances. This would indicate that providing additional information, namely that the qualification is equivalent to the German qualification, reduces em-

Figure 3: Possible Outcomes of the Recognition Experiment



Source: Own illustration.

ployers' uncertainties regarding foreign qualifications. However, we would still not know if it was because of the additional information or because the employer anticipated that a candidate who went through the process would be more motivated and therefore more productive.

The second outcome, no differences in positive response rate between the two candidates, would mean that German employers did not "benefit" from the additional information, and thus, neither did the candidates. Prospective employers might have (still) been unsure whether the candidate trained abroad had the necessary specialist knowledge but because of the absence of other consequences (e.g., higher labor costs), it would have considered candidates with recognition and without it as equal.

The third outcome would mean employers preferred candidates without recognition to candidates with recognition. This might have occurred if the recognition letter provided a "negative" signal to the employer. This might have been due to anticipated higher labor costs or beliefs about how demanding workers with recognized qualifications would be. Wages are often not negotiated individually but regulated by collective agreements. These

collective agreements specify different wages for those with and without finished apprenticeships. We can assume, based on a cognitive pretest, that the candidates without recognition would likely be hired as unskilled workers while the candidates with recognition would be hired as skilled workers. Yet, as Tibajev has noted, recognition does not change skills. Therefore, prospective employers may prefer candidates without recognition because they are cheaper to hire. Another explanation would be the anticipated demands made by workers with recognized qualifications. Contrary to the assumption above that employers would prefer candidates with recognition because they are more motivated, prospective employers may avoid these candidates because they regard them as "more demanding" in terms of working conditions like overtime, working late, etc.

To test whether an employer anticipated such selection effects by assuming that a candidate with recognition would be more productive. I also accounted for candidates who had formally begun but not completed the recognition process. This resume was intended to signal the candidate's motivation without providing further information. This intelligent research design allows me to control for the assumed selectivity bias. Let us do a head experiment. Analogous to the assumptions in Figure 3, imagine a scenario in which the candidate who has initiated the formal recognition process gets more callbacks than those without recognition. In that case, German employers would anticipate selection by expecting the candidate who had initiated the recognition process to be more motivated. However, the reverse might be true; the positive callback rate might be higher for the candidate

without recognition. This result would indicate that the information about the recognition process would send a negative signal to an employer. The earlier argument about the anticipated higher labor costs or "more demanding" candidates would kick in here then. If, however, there was a similar positive rate between candidates without recognition and candidates seeking recognition, then this would imply the absence of self-selection or the "negative" anticipated implication, i.e. higher labor costs.

5.1 Design and Implementation of Correspondence test

Correspondence tests were best suited for my purposes as they allowed me to infer causal effects in the recruitment process under natural conditions. This technique involved sending fictitious resumes in response to advertised vacancies to test the hiring opportunities of immigrants with and without official recognition of their foreign qualifications. Hiring opportunities were measured by recording positive responses by employers. Although correspondence tests are considered the best-practice method for detecting causal relationships in the hiring situation, they do have weaknesses. Correspondence tests fail to identify mechanisms behind the causal effect (Imai, Keele, et al. 2011). In the case of correspondence tests applied to the labor market, researchers can only detect the hiring decision, but they cannot discover how the recruiter reached the decision. Moreover, continuing in the same vein, the correspondence test approach assumes that all confounders are fully controlled for. This is true for observable characteristics and represents the correspondence test's biggest asset. However, potential field experiment par-

ticipants may infer conclusions from candidates' unobserved characteristics. To illustrate this point, we can look at discrimination studies, a discipline where, by far, most correspondence tests were carried out. The correspondence test approach provides estimates of discrimination for a particular group (sex, race, ethnicity, etc.). However, this approach cannot rule out the possibility that the recruiter will assign some unobservable features to one group (they are more motivated, cheaper, etc.) in the decision-making process. Although this can be interpreted as discrimination, researchers cannot detect the mechanism behind the discriminatory behavior. The same can be applied to the research question discussed here. Although the correspondence test reveals the causal relationship between the recognition letter and the hiring decision, it does not explain why employers made the decision.

Study design

I sent applications from fictitious job candidates with and without recognition of foreign qualifications to potential employers (see Table 1). I added a certificate of equivalence from the Chamber of Crafts (*Handwerkskammer*) to 40% of all applications. Moreover, to control for employer-perceived unobserved heterogeneity, in 20% of all applications, the motivation letter stated that the candidate was in the process of obtaining recognition and would hand in the certificate of equivalence as soon as it was issued. In the remaining 40% of applications, I did not mention the recognition process or attach a recognition letter to the application letter. All other background characteristics—e.g., gender, age, and country of origin—were identical regardless of the application form. Appendix A provides the experimental material,

recognition letter, and motivation letter. A customized software automatically assigned my experimental treatments to applications and vacancies.[21]

Table 1: Experimental treatments

Signal	Percent
No Recognition	40
In Process	20
Recognition	40

Country of origin

One aspect I focused on in the experimental design was where the candidate had obtained their foreign qualifications. A newcomer immigrant group fit the experimental setting best. This ensured that employers had little experience with the foreign qualifications in question and therefore relied more heavily on the recognition statement's informational value. Since immigrants from the EU are entitled to work in the EU and German employers are more or less familiar with the EU qualifications, I opted to focus on a non-EU immigrant group. I chose Bosnia and Herzegovina as the country of origin for several reasons: First, in 2016, Germany introduced the Western Balkans regulation, which gave immigrants from the Western Balkans region (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, Northern Macedonia, and Serbia) the opportunity to apply for a working visa in Germany. Indeed, until the COVID-19 pandemic, immigrants from the Western Balkan region were the largest immigrant group to Germany (see chapter German's Changing Immigration Landscape). Second, there is also a substantial Bosnian immigrant group living in Germany—partly descendants of the guest workers

[21] For further information, see Section 3.1. Implementation of the field experiment in (Veit and Yemane 2018)

but also refugees who came to Germany during the Balkans War. Indeed, the research on the impact of the Western Balkan regulation has shown that more than one-third of employees from the Western Balkan area used to live in Germany in their childhood (Brücker, Falkenhain, Fendel, Promberger, Raab, et al. 2020). The fact that the applications were posted from within Germany made it more credible that the fictitious applicant would remain in Germany. Furthermore, the applications were sent in correct German. Although most of the Balkan War refugees had to leave Germany (for the numbers, see chapter German's Changing Immigration Landscape), it is plausible that they may still know the German language well enough to write correct German, especially if they spent time in Germany during their childhood. In a nutshell, Bosnians are well suited as the fictitious candidate: There are substantial numbers of them, and they have a plausible history in Germany. Hence, external validity can be established.

This decision raises one further theoretical consideration. A similar study, the ADIS study (Veit and Yemane 2018), was conducted a few years ago. In it, Veit and Yemane (2018) tested ethnic discrimination in the labor market among applicants born in Germany with German qualifications from thirty-five ethnic groups, including Bosnians. I adjusted the experiment design used in this thesis to conform to the ADIS study so that synergies between the two projects could be exploited. To be able to compare the fictitious candidates in the two projects—namely in this experiment and the ADIS study—I ensured all candidate characteristics were the same, except the treatment and country of education[22].

[22]It is not part of this dissertation project

Occupation

I chose the occupation of plant mechanic for HVAC and sanitary engineering (*Anlagenmechaniker für Sanitär-, Heizung- und Klimatechnik*) [23] for the present correspondence study. They are mainly responsible for installing heating, air conditioning, and sanitary systems. I chose this occupation for the following reasons: First of all, the goal was to test the new recognition law. Therefore, from a theoretical point of view, I needed to focus on an occupation where qualifications are attained via the vocational system—this is where the difference between the old recognition law and the new one is salient. Under the old law, only academic degrees could be submitted for recognition. My decision to choose this occupation is also consistent with the realities of Western Balkan regulation, which therefore makes the application scenario more credible. The Western Balkan regulation aimed to meet German companies' substantial labor demand, especially in the construction sector (Brücker, Falkenhain, Fendel, Promberger, and Raab 2021). Moreover, as the research report on the impact of the Western Balkan regulation has shown, the majority of the employees from the Western Balkan region have qualifications at a medium level (primarily vocational qualifications) (Brücker, Falkenhain, Fendel, Promberger, Raab, et al. 2020) [24].

As with most German occupations, plant mechanics for HVAC and Sanitary Engineering undergo dual vocational training. Plant mechanic trainees

[23] For a comparison of the English and German terms, see https://www.darmstadt.ihk.de/produktmarken/aus-und-weiterbildung-channel/ausbildung-channel/anlagen-artikel/englische-berufsbezeichnungen-2535860

[24] Note, that because of the high demand of the plant mechanics in Germany, the profession also belongs to the so-called positive list, meaning that employees from non-EU-states too are entitled to work in Germany without a priority examination.

spend some days of each week at a publicly funded vocational school; the rest of the time, they are trained in the company. The dual training for plant mechanics usually lasts three-and-a-half years and is equivalent to level 3B of the International Standard Classification of Education (ISCED).

The organization of plant mechanic training in Bosnia and Herzegovina is different from that in Germany. In Bosnia and Herzegovina, theoretical training takes place in a public middle school, which is comparable to a German vocational school. Practical training takes place in practice classes in schools and in companies via internships. The vocational training for plant mechanics usually lasts three years.[25]

Plant mechanics for HVAC are in demand in Germany. The companies are desperately looking for skilled labor in this industry. However, it is unclear how the companies recruit employees. During a cognitive pretest interview, for example, an employer mentioned that educational credentials are not important in the industry; however, this leaves the question of how then they recruit employees. What's more, it is questionable whether the employer would hire an employee without having any reliable information on their skills. Some documents—e.g., a CV, a copy of educational certificates, and employer references—are essential.

Fieldwork

To increase efficiency, I used a modified software program initially created for the ADIS study, which automatized the application procedure. The software crawled for vacancies for plant mechanics for HVAC and sanitary

[25] https://www.bq-portal.de/db/3934/bosnien-und-herzegowina/installateur-von-heizungs-und-lueftungsanlagen-%28gueltigkeitsbereich-siehe-info%29/01-01-1996

engineering on the government-run employment agency job search website (www.jobboerse.arbeitsagentur.de) daily. The software's most important task was to automatically filter out vacancies that did not fit the fictitious applicant profile. For instance, it automatically discarded part-time or temporary employment agency vacancies. This was especially important because the Western Balkan regulation excludes temporary employment. Moreover, the software automatically removed duplicates if it detected similarities in contact details between recent and former job ads. This minimized the risk of sending multiple applications to the same company. It automatically assigned our experimental treatments based on the predefined 40/20/40 quota to applications and generated the respective application documents. Table 2 shows the treatment and control group distribution [26]. The match between the applicant profile and the job advertisement was checked manually before the application documents were sent by the software automatically to the employers by email. If the advertisement did not include an email address, application documents were printed and mailed. I excluded vacancies that required applications via an online platform. The experiment can be seen as a complete census, as I applied for all vacancies published during the study period on the government-run Jobboerse site. In total, 766 applications were sent between 01.06.2018 and 30.09.2019.

Finally, I recorded each employer's response and generated a feedback variable with seven categories (see Table 3). In cases where there was more

[26]Note, the treatment and control groups do not sum up precisely to the predefined 40/20/40 quota. This discrepancy is due to sorting out the application in the manual check, caused mainly by the mismatch between the fictitious applicant and the profile of the advertised job

Table 2: Distribution of treatment and control group

Treatment	Freq.	Percent
No Recognition	276	36.03
In Process	159	20.76
Recognition	331	43.21
Total	766	100.00

than one response, I took the more decisive response. For instance, if the first response was a missed call followed by an invitation to interview, I coded the feedback variable as an invitation. As can be seen in Table 3, almost 37% of all responses were invitations to a job interview. Only 5% of all responses involved asking further questions, confirming that the application material was credible. Most further questions concerned the individual's intention to move (from Mannheim to the place of work), salary expectation, or the residence permit. Around 10% of employers asked for a callback without specifying the exact issue, and three percent tried to reach the candidate by phone without leaving a message on the answering machine or sending a further email. 16% of employers sent a rejection. About 25% of companies never replied to the application, while 4% only sent a confirmation of receipt without further action. Since the ADIS study reported a similar response distribution, I regarded this distribution as a signal for the reliability of the application documents.

Finally, to minimize inconvenience to employers, I politely declined invitations to interview as quickly as possible, mostly within 24 hours by mail, stating the candidate would like to withdraw the application because he has received a better job offer. Otherwise, I did not communicate with the employer any further. I only withdrew applications after three days when the

employers tried to get in touch by phone (identified by a missed call) or left a message (without any suggestions regarding an interview). The idea behind this rule was to wait for a potential interview invitation.

Table 3: Outcome Variable: Callback rates

Response category	Response dummy	Freq.	Percent
Invitation	**Positive** (signal of interest)	277	36.84
Further questions	**Positive** (signal of interest)	38	5.05
Request for callback	**Positive** (signal of interest)	77	10.24
Hang-up	**Positive** (signal of interest)	21	2.79
Rejection	**Negative** (no signal of interest)	118	15.96
Confirmation of receipt	**Negative** (no signal of interest)	32	4.26
No response	**Negative** (no signal of interest)	187	24.87
		750	100.00

5.2 Operationalization

Dependent variable

Based on the employers' responses, I generated a dependent variable. The variable is coded as dichotomous. The main dependent variable, "Callback," takes a value of 1 (positive) when the employers either sent an invitation to a job interview, had further questions, asked for a callback, or made a missed call. Here, I applied Veit and Yemane's (2018) approach and coded "missed calls" as a positive response. Thus, I perceived each attempt to contact the candidate as potential interest in the candidate by the employer. The variable takes the value of 0 (negative) when the employer sent a rejection or a confirmation-of-receipt letter without any further contact attempt or if there was no activity at all (see Table 3).

Control Variables

Besides the treatment and control group, I also controlled for different employer characteristics in the multivariate analysis. The information was automatically retrieved from the German employment agency's website. First, I controlled for the number of employees in the company. I generated a variable differentiating between three categories: 20–50 employees (0), 51–500 employees (1), and more than 500 employees (2). Further, I controlled for where the company was located. I differentiated between old and new federal states. The dummy variable took the value of 0 when the company was located in West Germany and 1 when it was located in East Germany. I further controlled for economic area. The sectors are categorized according to the Statistical Classification of Economic Activities in the European Community Rev.2 (NACE). The data differentiated between four industries: construction, water, and electricity (1); manufacturing and wholesale (2); accommodation, real estate, education, arts, and public (3); and all other industries or companies with no information on the industry (4). Another variable captured whether the employer had a collective labor agreement (1) or not (0). The latter includes both cases where the employer did not have the agreement and where they did not list it on the government-run job-search website.

5.3 Results

5.3.1 Descriptive Results

55% of all applications received a positive response (see Table 4). This is 2 percentage points lower than reported in the ADIS study (Veit and Yemane 2018). 43% of the companies had between 20 and 50 employees, and 48% had between 50 and 500 employees. Only 9% had more than 500 employees. There are relatively small and medium-sized businesses that represent the craft industry. The distribution of the regions where the companies were located was also nationally representative; 20% of all companies were located in East Germany. About 61% of companies were either in the construction, water, or electricity industry, although the construction industry was overrepresented (at 70%). This was followed by accommodation, real estate, education, art, and the public service industry, at 20%. In this sector, the most frequently vacant positions were janitorial ones. Over 14% of companies were in the manufacturing or wholesale industry. The rest were in various other industries or did not provide information on the industry. In 66% of cases, there was no collective labor agreement, or the employer did not provide the information on whether there was a collective labor agreement.

The Effect of the Recognition (letter)

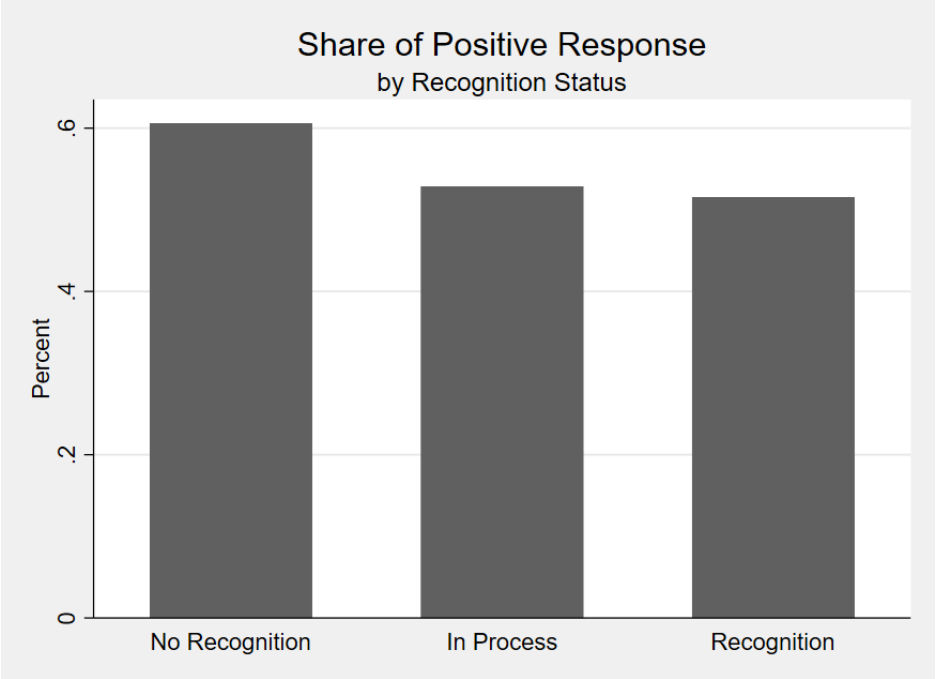
I will start by analyzing the effect of the recognition letter. Figure 4 shows callback rates for the different treatment groups, namely (without recognition letter, with a statement in the motivation letter and with recognition letter).

Table 4: Summary statistics: Firm characteristics

Variable	Obs.	Mean	Min.	Max.
Callback	750	0.55	0	1
Firm Size				
20-50	750	0.43	0	1
50-500	750	0.48	0	1
>500	750	0.09	0	1
Location				
West	750	0.80	0	1
East	750	0.20	0	1
Industry				
Constr., Water, Elect.	750	0.61	0	1
Accomm., RE, Educ., Arts, Public	750	0.20	0	1
Manufacturing, Wholesale	750	0.14	0	1
Other, No Info.	750	0.05	0	1
Collective Agreement				
No collective agreement	750	0.66	0	1
Collective agreement	750	0.34	0	1

The results may seem surprising at the first sign, the candidate with the recognition letter received proportionally fewer callbacks than the candidate without the recognition letter. The difference is significant—the candidate with the recognition letter had a positive response rate of only 51.54%, while the applicant without recognition had 60.59%. This 10-percentage-point difference is statistically significant at the conventional level ($p<0.02$). In other words, the candidate with the recognition letter received 1.2 times fewer positive responses than the candidate without the recognition letter. Given that all three candidates have identical profiles, the differences between the candidate who submitted the recognition letter and the candidate who did not can be fully attributed to the effects of the recognition letter. These results show that the recognition letter elicited a strong reaction among employers,

Figure 4: Share of positive response by recognition status



but not in the way hypothesized in the previous chapter. Rather than serving as useful information, as signalling theory suggests, the recognition letter seems to provide a negative signal to employers. One possible argument here is that the letter of recognition may not have offered any further benefits to employers. However, in that case, the callback rates should have been at least the same for the two candidates. Another likely explanation is that German employers are reluctant to hire the candidate with the recognition letter because they anticipate higher costs for the candidate. This could have unforeseen implications, like lower participation in the recognition process. For instance, some already employed foreign workers reported being afraid that their employers could interpret their participation in the supplementary training required for full recognition negatively and, for example, assume

that they would demand a higher income (**IQ**).

The Signalling Effect of being in Recognition Process

Figure 4 shows also the percentage of callbacks received by candidates who mentioned that they had initiated the recognition process in their motivation letter. There were differences in the callback rates between candidates without recognition and those who mentioned in their cover letter that they had applied for recognition of their foreign qualification but had not yet received the result. The latter group had a positive response rate of 52.84%. This suggests that simply mentioning the recognition procedure in the cover letter elicits a different reaction. Since this statement does not reveal additional information about the candidate's skills or the outcome of the recognition process, the result supports the previous assumption that recognition may have a negative impact. There are several possible explanations for this. One possibility is that employers anticipate higher labor costs if full recognition is granted, as hypothesized earlier. Another explanation could be that employers prefer candidates without recognition because they expect them to be less demanding in terms of working conditions, such as wage level and overtime. Although there was a slight difference in callback rates between candidates with recognition and those who had initiated but not completed the recognition process, it was not statistically significant. However, it shows that the recognition letter generates a stronger "negative" signal compared to simply mentioning the recognition process. This supports the hypothesis regarding labor costs. The signal of being in the process implies that the

candidate may, if fully recognized, be entitled to higher pay as skilled labor. In contrast, a candidate with recognition is already recognized, making them less attractive to employers.

Both results contradict those of other studies on the recognition effect (Brücker, Glitz, et al. 2021; Damelang, Ebensperger, and Stumpf 2020; Kogan 2012; Pecoraro and Tani 2023; Tibajev and Hellgren 2019). However, the other studies are either based on observational data or survey experiments, both of which are problematic: Observational data do not contain information on the hiring process, and survey experiments measure the hiring intention rather than hiring itself, which can deviate from hiring intention (LaPiere 1934; Pager and Quillian 2005).

5.3.2 Multivariate Results

In the next step, I will provide a detailed overview of the employment opportunities for immigrants, both with and without recognition in multivariate setting. To disentangle the effects of different employer characteristics, I conducted a series of regression models, introducing control variables stepwise. The callback dummy is the dependent variable.

Following Wooldridge's (2010) recommendation, I carried out an ordinary least square regression instead of a logistic regression. Table 5 presents the main effects of the various analyses. As can be seen from Model 1, which does not include any control variable, the multivariate results replicate the descriptive results. They show that the recognition letter decreases the probability of a callback. The effect is about 9 percentage points. The probability

of a callback falls by 7% when the candidate indicates in the motivation letter that he/she is in the recognition process compared to no recognition letter. However, the effect is not significant. Although the limited sample size of the group prevents us from conclusively demonstrating this effect, the results are nevertheless suggestive of an important dynamic. As I argued in the previous section, German employers do not utilize the additional information about the skills the letter of recognition contains. The indication that someone is in the recognition process, without offering any additional information, seems to elicit a similar response from employers as a formal letter of recognition would. This suggests that many employers appear to use recognition as a screening tool, regardless of the extra details provided in the recognition letter. Furthermore, it seems that not only is this information often overlooked by German employers, but the recognition letter may even provoke a negative reaction, contrary to what one might expect theoretically.

I then estimated the probability of getting a callback in a multivariate setting, where I controlled for company characteristics by introducing them stepwise, beginning with size (model 2), location (model 3), the industrial sector (model 4), and collective agreement (model 5). Most employer characteristics did not affect the callback rate—the company size, the location, or the industrial sector. At the same time, the impact of recognition remained consistent across all models, offering reassurance of its validity.

Table 5: Linear probability models.

	Model 1	Model 2	Model 3	Model 4	Model 5
Treatment (Ref.: No Recognition)					
In Process	-0.0773	-0.0766	-0.0767	-0.0757	-0.0754
	(-1.55)	(-1.53)	(-1.53)	(-1.50)	(-1.50)
Recognition	-0.0905*	-0.0910*	-0.0911*	-0.0920*	-0.0877*
	(-2.21)	(-2.22)	(-2.21)	(-2.23)	(-2.12)
Firm Size (Ref.: 20-50)					
51-500		0.0140	0.0140	0.0241	0.0317
		(0.37)	(0.37)	(0.60)	(0.79)
>500		-0.0255	-0.0257	-0.00430	0.00686
		(-0.39)	(-0.39)	(-0.06)	(0.10)
Location (Ref.: West)					
East			-0.00162	-0.00200	-0.0150
			(-0.04)	(-0.04)	(-0.32)
Industry (Ref: Constr., Water, Elect.)					
Manufac., Wholes.				-0.0503	-0.0674
				(-0.91)	(-1.21)
Accom., RE, Educ, Arts, Public				-0.0352	-0.0238
				(-0.69)	(-0.46)
Other, Missing				-0.00130	-0.00907
				(-0.02)	(-0.11)
Collective Agreement (Ref.: No)					
Yes					-0.0725
					(-1.78)
Constant	0.606***	0.602***	0.602***	0.610***	0.631***
	(20.01)	(16.38)	(15.58)	(15.41)	(15.29)
N	750	750	750	750	750

t statistics in parentheses

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

5.4 Summary and Conclusion

Recognition of foreign qualifications is widely believed to have a positive impact on employment opportunities. Numerous studies support this assumption, relying on the signalling value that such recognition has in hiring processes. However, there have been limited efforts to uncover the specific mechanisms of occupational recognition in the hiring situation.

In the present study, I aimed to determine the impact of a certificate of equivalence on an immigrant's chances of being hired. The study utilized a correspondence study, and the results showed that rather than reducing employers' uncertainty in the hiring process, employers were more hesitant to hire candidates who provided a letter of equivalence. Additionally, even candidates who merely mentioned being in the recognition process in their motivation letter received fewer positive responses than those who did not mention recognition at all, although this difference was not statistically significant. The certificate of equivalence actually diminished immigrants' chances of being invited for an interview.

At first glance, these results contradict the theoretical assumption and previous empirical evidence in this field. However, these results make sense when considering the possibility that recognition may work differently than expected in certain areas. There are several possible explanations for these findings. One obvious explanation is that German employers do not rely on the recognition letter, however, this would imply that the response rate should be consistent for candidates with and without recognition. The letter of equivalence seems rather to send a negative signal to employers. What

leads employers to react so differently to applicants with recognition letters? One plausible explanation is related to wages. Employers may be hesitant to hire candidates with recognition because they are unsure about the wages they would need to pay them. In Germany, where qualifications significantly impact access to occupations and levels of pay, employers may feel uncertain, particularly if they anticipate having to pay higher wages. Foreign workers undergo the recognition process to secure higher wages, enabling employers to classify them as skilled professionals and fully leverage their valuable skills.

What are the potential implications of the recognition effect for professions beyond the scope of the current study? The significance of a recognition letter may vary in academic professions or non-craft occupations, where educational qualifications are valued more highly. In fact, a study by Damelang et al. (2020), which specifically examined the recognition effect in hiring situations, found no positive recognition effect in low-skilled jobs, such as hotel specialists. However, since the Damelang et al. (2020) study is limited to hiring intentions, the only way to directly address these questions is to replicate the correspondence study using a variety of educational diplomas and professions.

Nevertheless, this study provides a much-needed reality check. It showed that some signals, such as the recognition process and letter of equivalence, play a crucial role in the hiring process. Employers use these signals as a screening device, as the signalling theory suggests.However, the recognition works differently than anticipated, highlighting the complexities of hiring foreign labor.

6 Employers' and Stakeholders' Perspectives

The results of the field experiment have brought up many complex and intriguing questions about employer behavior in hiring situations. Why are German employers hesitant to hire foreign-qualified candidates with letter of equivalence? Some might explain this by suggesting that employers do not place much importance on the recognition letter—but if this were the case, we could expect the callback rate to be the same. In fact, the letter of equivalence or the circumstances mentioned it in the motivation letter send a negative signal to the employer. The last chapter hypothesized that employers' preference for candidates without recognition letters could be due to their economic rationality and desire to save on labor costs. However, before exploring this hypothesis, we need to clarify the following questions first: **Do employers view the recognition of foreign qualifications as a proof of skills? Additionally, do employers hire applicants with recognized qualifications as skilled labor?**

To support disseminating the findings of the field experiment, I urged employers from the industry to take part in an online survey concerning their hiring priorities. The survey concluded with an open-ended question designed to elicit employers' rationales for their willingness or reluctance to hire an applicant with or without a letter of equivalence. The survey showcased the results of the field experiment and outlined possible explanations for the unexpected negative effect of recognition. This question provided employers with the opportunity to convey their perspectives. The following text was presented and respondents were asked to discuss these issues in their own

words:

Germany needs skilled workers. Around 40% of all skilled trade businesses state that they have problems filling vacancies. Recruiting foreign skilled workers could reduce the demand for skilled workers. However, companies are often faced with the problem of not correctly assessing the content and quality of foreign qualifications. The recognition of foreign professional qualifications helps with personnel recruitment by making it easier for companies to assess the qualifications applicants bring. When recognizing professional qualifications, the responsible institutions (IHK, HWK, etc.) check the extent to which the foreign professional qualifications correspond to the German professional qualifications. However, does the recognition of foreign professional qualifications facilitate the recruitment of foreign skilled workers in practice? The University of Mannheim and the Social Science Research Center Berlin investigated this question in a study. As part of an experiment, application documents from plant mechanics for sanitary, heating, and air conditioning technology were constructed. These applications were sent in response to job vacancies. The letter of equivalence was sent with half of the applications. Around 700 applications were sent out across Germany between June 2018 and September 2019. To our astonishment, this experiment found that applicants with recognition were invited to an interview less frequently than applicants who did not send a certificate of equiv-

alence. Unfortunately, the study cannot answer why this is the case. One possibility is that applicants without a letter of recognition were given preference, as they are not classified as skilled workers and are therefore "cheaper." ***How do you see this as a practitioner? If you have any suggestions, we would be delighted if you would write them down here:".***[27]

About 35% (n=45) of respondents[28] submitted an answer to the open question, which is also in line with previous research (Poncheri et al. 2008). In the following discussion, I examine responses to the question and their relevance to the research question. Together, these perspectives reflect the complexity associated with applicants with letters of equivalence.

6.1 In the Words of the Employers

Many respondents commented in general rather than answering the question. Therefore, I identified four main topics that are relevant to my research question: recruitment determinants, pay structure, opinion on cost-saving strategy, and alternative explanations.

Recognition and Recruitment Process

Recognizing foreign qualifications is one of the most important determinants of hiring. However, this is hardly surprising since the fact that recognition is salient for employers hiring a candidate with foreign skills, which is most

[27] The original text is located in the Appendix.
[28] Further details about the respondents can be found in Chapter 8.

likely the result of initial priming. At least nine employers explicitly mentioned the recognition as essential for hiring skilled workers.

Interestingly, only a few employers (n=3) viewed the letter of equivalence as evidence of skills. According to as one employer "Ein anerkannter Abschluss m. Gleichwertigkeitsbescheid ist ein Garant für Fachkenntnisse." [A recognized qualification with a certificate of equivalence is a guarantee of specialist knowledge.]. Another employer puts the value of recognition into perspective arguing "...Die Anerkennung eines gleichwertigen Abschlusses sehe ich als Grundlage dafür an, daß Grundkenntnisse vorhanden sind." [I regard the recognition of equivalence as a basis for ensuring that basic knowledge is available.] and adding to it "Einen gleichwertigen Handwerker habe ich dabei noch nicht finden können..." [I have not yet been able to find an equivalent craftsman]. The latter statement emphasizes that although the recognition letter serves as evidence of "basic" professional skills, training abroad is not considered equivalent to German training. Three separate employers explicitly mentioned that a foreign education is not comparable to a German education due to the regulations and level of technical development in Germany. Fittingly, in the study by Mergener (2018), employers concerns due to lack of comparability of foreign degrees were one of the main reasons for the reluctance to hire candidate with foreign qualifications. This effect seem to be particularly pronounced in areas where dual training is required. This might be due to specific training obtained in German apprenticeships. While academic education is considered rather general in Germany, German apprenticeships are considered to be "tailored" to employers needs,

while foreign apprenticeships are not, with the exception of those in other German-speaking countries. Apparently, recognition does not minimize these concerns for some employers.

Some employers (n=2) stated that they value foreign qualifications but apparently for different reasons than signalling skills value. For instance, one employer reported hiring craftsmen with recognition because the customers expect them to do so: "In unserem Fall verhält es sich so, das wir die Eignung der Kandidaten belegt haben müssen, da unsere Auftraggeber das verlangen. Ohne eine Anerkennung können wir die Kandidaten nicht einstellen..." [In our case, we have to prove the suitability of the candidates, as our clients require this. Without recognition, we cannot employ the candidates...]. Another respondent stressed preferring to hire workers with recognition because of the German colleagues' resentment regarding the wage level: "Trotz Verschwiegenheitsklausel in allen Arbeitsverträgen tauschen sich die Mitarbeiter über ihre aktuellen Stundangemessenen Lohn zu zahlenenlöhne aus und vergleichen einander kritisch und z.T. leider auch mit Missgunst. Die Anerkennung einer Berufsausbildung erleichtert es mir ausländischen Mitarbeitern bei vergleichbarer Arbeitsleistung einen angemessenen Lohn zu zahlen ohne von Dritten das Lohngefüge insgesamt infrage stellen zu lassen müssen" [Despite confidentiality clauses in all employment contracts, employees discuss their current hourly wages and compare them critically and, unfortunately, sometimes with resentment. Recognizing a professional qualification makes it easier for me to pay foreign employees an appropriate wage for comparable work performance without having third parties question the wage structure

as a whole]. Apparently, even for those who attach importance to the letters of recognition, it is less the additional information that the recognition letter provides but rather the "credentialism" mechanism. Otherwise, the qualifications are not recognized as equivalent to German qualifications by employers, co-workers, or customers. Moreover, the "credentialism" mechanism has an effect on the wage structure, as the last employer indicated.

For some employers (n=6), recognition is not a relevant factor in hiring at all. Those employers stressed importance of German language skills and motivation. They believe that workers should prove their skills "on the job." However, this stance raises concerns about potential bias in their hiring practices. It is unclear how these employers recruit, but it's unlikely that they would invite all applicants to an interview, as the field experiment also illustrated (only 54% had a positive response). These statements suggest that these employers may be inadvertently perpetuating biased hiring practices by potentially categorizing candidates as unskilled labor.

Recognition and Wage Setting

The responses shed light on the pay structure within the occupation. The question is: Do employers compensate applicants differently based on recognition? The responses reveal a nuanced, mixed perspective on this issue.

Some respondents stated that they hire foreign workers as unskilled labor. In the words of one employer "In aller Regel erst einmal als "Helfer" zum Mindestlohn oder etwas über dem Mindestlohn ein." [That is why we generally hire applicants from abroad as "assistants" at minimum or slightly

above minimum wage first]. The unaddressed question here is: How would an employer justify hiring a candidate with a recognized qualification as unskilled labor? Another employer explicitly mentioned employing applicants without recognition as unskilled labor "Bewerber ohne Anerkennung werden nur auf Stellen eingestellt, die keine Anerkennung vorraussetzten und dementsprechend auch für ungelernte Fachkräfte verfügbar sind." [Applicants without recognition are only hired for positions that do not require recognition and are therefore also available for unskilled workers.]. However, it suggests that foreign workers then also work in less demanding jobs. Thus, employers devalue foreign qualifications and equate holders of these qualifications with employees with no occupational credentials. In a similar manner to the candidates subject to the race-coded job channeling reported by Pager et al. (2009), applicants without recognition in our study are steered toward unskilled job positions. However, on the other hand, the employer's statement would also mean that applicants with the recognition are remunerated as skilled labor. Indeed, many employers agree that employers may anticipate higher labor cost expectations from an applicant with recognition. This suggests that candidates with recognized foreign qualifications are assumed to be more expensive. Fittingly, some foreign workers reported to refrain from going through the recognition process due to a fear that employers could interpret their recognition negatively and assume, for example, that they will demand a higher income (Adacker and Reyels 2019).

Some respondents argued that they pay for performance at work, which they equate with productivity. They report applying the principle of equal

pay for work of equal quality. While this argument is valid, it raises the question of how employers compensate their workers when they do not know their productivity, particularly in relation to recognition letters. Other respondents even went so far as to argue that the salary level does not matter at all. According to this employer "Eine Fachkraft zeichnet sich nicht durch sein Papier, sondern durch sein Tun aus. ... Ob diese Person (er oder sie) Zeugnisse hat, oder was er/sie verdienen möchte ist für die Entscheidung erstmal egal. Wer Interesse an der Arbeit hat und zusätzlich Engagement mitbringt, erhält eine Chance und wird auch entsprechend bezahlt." [A skilled worker is not characterized by his papers, but by his actions. ... Whether this person (he or she) has certificates or what he/she wants to earn is irrelevant to the decision. Anyone who is interested in the work and is also committed will be given a chance and will be paid accordingly.]. Although some employers claim to pay according to performance, the claim that credentials have no impact on the wage-setting process lacks all credibility in a labor market where educational credentials are essential for occupational placement (DiPrete et al. 2017). Here, the employer might want to stress that applicants can also achieve equivalent skilled labor wages without having their foreign qualifications recognized.

One respondent argued that employers might be reluctant to hire a worker with recognition because they do not know what wages to pay. This argument, however, suggests that foreign workers without recognition might be hired and paid as unskilled workers. Otherwise, the firms would also hesitate to hire a foreign-qualified candidate without recognition. However, it also

reveals that the uncertainty regarding foreign qualifications remains as the firms are reluctant to pay the wages for skilled workers.

The employers' answers paint the following picture. German employers might be willing to hire foreign candidates as unskilled workers and pay them higher wages once the workers prove their ability; this allows them to secure skilled labor without recognition. Moreover, the answers also allow me to draw a key conclusion regarding recognition in the wage-setting process: Employers anticipate that candidates with recognized credentials will be more expensive than candidates without them.

On Opportunities to Save on Labor Costs

In asking this open-ended question, I primarily aimed to determine whether employers preferred applicants without a recognition letter in order to save on labor costs. The underlying assumption was that employers perceive candidates with recognition as skilled labor but can initially hire those without recognition as unskilled labor. It's important to note that recognition does not alter the applicant's skill set. Therefore, hiring an applicant without recognition is a more cost-effective option for the employer.

Respondents' answers regarding whether they agreed or disagreed with the stated assumption were as follows: 14 respondents agreed with the hypothesis "employers prefer cheap labor," while only one respondent clearly rejected the hypothesis. Others did not comment on this issue. Among those who agreed, six stressed that although other employers may have hired workers with unrecognized qualifications as a cost strategy, they were looking for

skilled labor. Note that the question has a rather suggestive character and should be treated with caution. Moreover, one respondent from the public service stated this might be a strategy for private companies, which are more cost-sensitive. However, the data from the field experiment provide no signs that the hiring patterns are different for the organizations in public service [29]. Another employer suggested that bigger companies might adopt this strategy, since they can provide teams consisting of just one skilled craftsman and several assistants. Here, too, I found no evidence of this pattern after checking the data from the field experiment. Conversely, applicants with recognition experienced less substantial disadvantages in larger companies. This makes more sense since those companies are more likely to be able to afford skilled labor.

Overall, the answers do not allow me to draw a clear conclusion. While many employers seem to agree with the labor-cost-saving hypothesis, just as many stress the importance of skilled labor. Moreover, we must be cautious when generalizing these findings, as there may be a selection effect in the survey. There is evidence that those who answer open-ended questions are driven by interest regarding the survey topic (Zuell 2016). Since the email inviting respondents to participate in the study had a subject line that referenced skilled labor—it read "A study about recruiting skilled labor force in the craft sector"—I assume most respondents who took part in the survey were interested in skilled labor rather than cheap labor. This argument applies even more so to those submitting a comment in response to an open-ended question.

[29] The results are available on request

Alternative Explanation

Some respondents (n=4) claimed that employers might prefer "unskilled" or "unrecognized" foreign workers so that they can train them better, as one respondent formulated: "Vielleicht schwebt bei den anderen Unternehmen der Gedanke mit, den Kollegen noch weiter ausbilden zu können." [Perhaps the other companies have the idea of being able to train the colleague even further.]. Plant mechanics may require a high amount of firm-specific human capital and firms may be expected to train the candidate anyway (Damelang, Ebensperger, and Stumpf 2020). Thus, foreign-qualification recognition may not be essential. However, the argument implies that German employers consider foreign employees as having insufficient hard skills or as another respondent stated: "Eine Mitarbeiter mit anerkannter ausländischen Berufsqualifikation würden wir sehr gründlich prüfen, bevor wir ihn mit einem Mitarbeiter gleichstellen, der seine Berufsausbildung in Deutschland gemacht hat." [We would thoroughly check an employee with a recognized foreign professional qualification before putting him on an equal footing with an employee who has completed his professional training in Germany.]. This argument seems to have substance. Some employers questioned whether foreign qualifications (with recognition) were equivalent to German qualifications. It again shows that recognition does not minimize German employers' reservations regarding foreign qualification. Similar to how foreign qualifications are assessed by German institutions (Sommer 2015), German employers rank the education standards by country of education, with Germany occupying

the highest place in the standard ladder. For instance, Damelang and Abraham (2016) found that French occupational diplomas are less highly valued by German employers, although they are legally equivalent to German ones. Moreover, in a further study, Damelang et al. (2020) showed that German employers do not consider foreign-trained candidates as equal to German-trained ones.

The reason for this might relate to German statutory regulations, as the experts interviewed indicated (see Chapter 7) and some respondents stressed "Dies liegt sicherlich daran, dass die meisten Arbeitgeber davon ausgehen, dass die bei uns geltenden technischen und rechtlichen Regelungen im Installationsgewerbe trotz einer vergleichbaren Ausbildung bei den Handwerkern nicht bekannt sind. [This is certainly due to the fact that most employers assume that tradespeople are not familiar with the technical and legal regulations that apply in our country, despite having comparable training.]. Even if the foreign worker possesses hard skills, the German regulations are seen as different from those in other countries and, therefore, the foreign workers' skills are not equivalent to those of the German worker. This might be why some employers prefer "unskilled labor" because they expect to train them (on legal regulations). The question remains whether these employers' behavior patterns can be observed in occupations where legal differences are less pronounced.

6.2 Stakeholders' Perspectives

I also conducted a small qualitative study. My aim was to find out whether the recognition of foreign qualifications leads to a employer norm of employing job seekers as skilled workers, even if they have some reservations regarding qualifications. Therefore, this time, I focused on professional associations and union representatives. I interviewed a Christian Union Metal Industry (CGM) member, representing the plant mechanics for sanitation, heating, and air-conditioning in collective bargaining. Moreover, I spoke with two guild representatives from Berlin and Rhine-Neckar for sanitation, heating, and air-conditioning. Moreover, I conducted two further interviews with employees from the South Westphalian Chambers of Crafts (Handwerkskammern). All interviews were semistructured and the answers were captured through field notes.

The results of the interviews were, similar to the answers to the open question, mixed. On the one hand, all interview partners claimed to pay based on "performance"; simultaneously, they admitted that the practice of paying foreign workers as "assistants" even though they provide "skilled" labor was widespread, though mostly, the interviewees said that "other companies do so." According to the interviewees, foreign employees usually initially work as assistants at the company. After a while, they endeavor, often with the help of the companies, to get their qualification recognized to get higher wages. Moreover, while all interviewees stressed that the certificates were of secondary importance, they also recognized that the German or European guidelines in this occupation were obstacles to working in it. This means for-

eign employees are not entitled to perform specific tasks without recognition.

These interviews confirm the employers' perspective described in the previous chapter. This is, on the one hand, hardly surprising, since most interviewees are members of the occupational association. On the other hand, it is remarkable since I previously argued that there may have been selection bias in the response to the open questions. The results of the present analysis tend to confirm the results of the survey. Consequently, the results indicate that even if foreign qualifications may be comparable to German qualifications, employers do not consider foreign skills equivalent to German ones due to higher regulations in Germany. This might be the reason why foreign workers also get lower wages. These regulations contribute to the closure effect explained in the theory section.

6.3 Concluding Remarks

The findings from the analyses, although based on a limited sample size, offer interesting insights. The discussion in this section has been descriptive in nature rather than causal. Nevertheless, the analysis makes a unique contribution to the study of the effects of recognition of foreign skills, revealing mechanisms at work that neither observational nor experimental research cannot uncover.

The results are inconsistent. While many employers support the hypothesis that employers prefer "cheap" labor, they simultaneously emphasize the value of skilled labor. The support for the hypothesis may result from the previous priming, as the open question openly suggests the reasoning. The

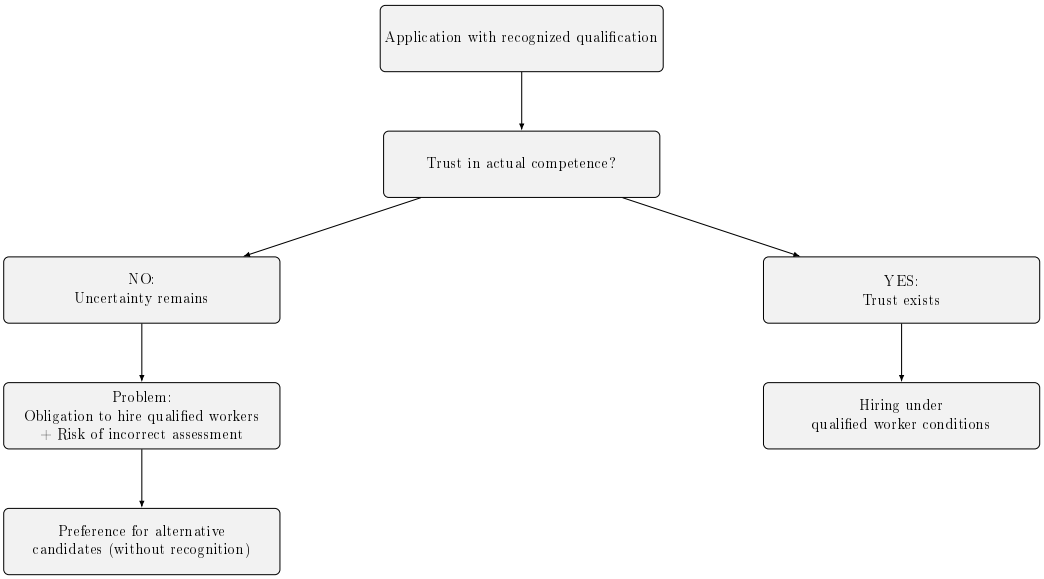
appreciation of skilled labor may be due to selection bias, as only those honestly concerned about securing skilled labor participated in the survey.

Another question that remains unanswered is whether German employers regard foreign qualifications as equal to German qualifications. Two respondents argued that the letter of equivalence should be regarded as proof of skills, while an equal number of employers contended that, despite recognition, foreign-qualified workers should not be equated with German ones due to technological and legal differences. Some employers expressed a preference for trained foreign workers without official letters of recognition because of the potential to train them.

These arguments indicate that German employers do not consider the recognition letter an additional source of information, at least not during the hiring process. This may be due to the implications of the recognition letter, including the requirement to hire a recognized candidate as a skilled worker. In this context, an employer should be less inclined to hire a candidate with recognized qualifications. Although some employers claim to pay by performance, it is not clear how they can pay for "performance" for which they have no evidence. In a society with a tight connection between education/training and employment (DiPrete et al. 2017), the notion that employers would hire candidates with recognized qualifications to the same assistant positions they would reserve for those without recognition seems astounding. Yet, there are plausible reasons for this: Employers have reservation regarding foreign skills in spite of recognition and, because they are required to hire candidates with recognized qualifications as skilled labor,

employers may prefer candidates without recognition (see Decision Process in Figure 5). This emphasizes that recognition does not minimize concerns, at least not given the anticipated higher labor cost. Here, it is worth recalling that only six employers in the sample had experience with the recognition. Reservations might be less pronounced once recognition is better known.

Figure 5: Decision Process



Source: Own illustration.

7 Understanding Employers' Hiring Behavior

Why do German employers react so differently to applicants with a letter of equivalence compared to those without one then? Recall that if the letter of equivalence failed to provide additional information, the callback rate should have been the same for applicants with and without the recognition letter. My findings, especially those regarding the effects of having initiated the recognition process, suggest that employers' behavior is not triggered by the information the letter of equivalence contains but by the implications of the recognition itself.

In the previous chapter, I hypothesized that employers may be wary of applicants with a recognition letter because they assume they are more expensive to hire. It is important to note again that the recognition does not change the applicant's skill set. The recognition letter is a crucial factor in the hiring process, as it may have implications for the wage-setting process. Applicants with recognition are perceived as "skilled labor" and therefore need to be paid as such. Despite this, since the recognition letter does not change the applicant's skills, it is cheaper for the employer to hire a candidate without recognition to assistant tradesperson positions, which means the companies nonetheless get "skilled labor," just without the formal credentials.

To test this hypothesis, I further carried out a survey choice experiment. Although field experiments are the simplest and most effective way to uncover causal impact, they cannot uncover the mechanisms behind the causal effects (Imai, Tingley, and Yamamoto 2013). It is thus impossible to iden-

tify which cognitive attributions triggered by the recognition letter produce the effects. The easiest way to uncover the reasons for the hiring decision is to measure hiring intentions. Although hiring intentions do not correspond perfectly to hiring behavior (Fishbein and Ajzen 2011), they are still important determinants of it (Treischl and Wolbring 2022). One way of examining hiring intentions is to ask employers directly which applicant they "would" invite more often. However, if hiring intentions are underpinned by cost-saving considerations, we could expect a social desirability bias. Survey choice experiments have the advantage of avoiding social desirability bias (Auspurg, Hinz, et al. 2014), as they combine the advantages of experimental and survey research. My intention in conducting such an experiment is to complement the results of the correspondence study and the survey by answering the question of whether German employers prefer candidates without recognition due to their lower labor costs.

7.1 The Design of the Survey Experiment

Choice experiments simulate a hiring situation. Widely used in marketing and transportation economics, they measure preferences for an option. Respondents are presented with several choice sets or choice tasks, where they have to choose between the options (also known as "alternatives" in the choice experiment literature). These choice sets have several attributes, which vary between the choice sets (For better understanding, see Figure 4 in Auspurg et al. (2015)).

To test the hypothesis of whether the wage level is more relevant for

employers than recognized qualifications, I introduced the hypothetical applicant with the following description (attributes): the recognition of foreign qualifications, German skills, wage expectations, personal strength, and driving license. Note that I only varied the recognition and wage level between the choice sets. I set two levels of foreign qualification recognition: Yes and No. There were three levels of the wage attribute: no information, the basic wage (*Ecklohn*) for a skilled worker, [30] and 80% of the basic wage (see Table 6). I present the wage as the basic wage instead of the actual wage mean to take account of wage differences (i.e., between West and East Germany). The median difference between unskilled and skilled labor in this industry was around 15% in December 2018 (Statistik der Bundesagentur für Arbeit 2020). I only presented the other attributes—like German skills, personal strength, and a driver's license—because an experiment with two attributes may seem too obvious for the participants and thus easy to see through. Moreover, the other attributes convey information usually contained in a resume.

Table 6: The attributes and their levels

Attribute	Levels
Recognition	Yes; No
German skills	Fluent
Wage expectation	No information; Basic wage; 80%
Personal strength	Working independently
Driving license	Yes

Because even with the limited number of attributes (2) a full factorial design results in too many choice tasks ($36 = (3 \times 2) \times (3 \times 2)$), I used a

[30] The *Ecklohn* acts as a reference wage in collective wage agreements and is equivalent to the wage for a skilled employee in lower range wage in the occupation

fractional factorial design, which meant only presenting a restricted number of choice sets to participants. To choose which choice sets to present to the respondents, I used a so-called optimal orthogonal in the differences (OOD) design. The advantage of these so-called D-optimal designs is that although the attributes are independent, the attribute levels never take the same value in a choice set (Mariel et al. 2021). The foldover technique was used to measure interaction effects between attributes (Ngene 2018). The analyses resulted in 24 choice tasks [31]. I used the so-called unlabeled alternative design (Louviere 2000), meaning that the respective options have no specific name and no further information was provided other than the attributes contained. The choice tasks were limited to two alternatives without an opt-out option.

To make it more convenient for employers, I limited the number of choice tasks to four randomly assigned to each respondent. Before showing participants the respective choice set, I asked them to imagine having a vacancy for a plant mechanic for sanitary, heating, ventilation & air conditioning systems in their company that they needed to fill as soon as possible. All presented candidates were from Poland[32] and had eight years of work experience in Poland. Respondents were asked to choose between two candidates with different attributes in each choice task. Table 7 presents an example of a choice task from the experiment.

In addition to conducting the choice experiment, I collected data on key

[31] I am much obliged to Ulf Liebe, who carried out the analysis.

[32] At the time of the survey experiment, in September 2020, the Western Balkan regulation was about to run out. Because I worried about possible confounding effects regarding this circumstance, I chose Poland as the country of origin (instead of Bosnia and Herzegovina as in the field experiment).

Table 7: Example of the choice experiment

	Candidate A	Candidate B
Recognition	Yes	No
German skills	Fluent	Fluent
Wage expectation	basic	80%
Personal strength	working independently	working independently
Driving license	yes	yes
Please choose		

firmographics (i.e., number of employees, sector, and federal state) in the survey. Moreover, I asked whether the employers had employees with foreign qualifications and whether they were familiar with the recognition of foreign qualifications. The aim was to keep the survey as short as possible. Thus, the survey comprises 10 total questions and lasted less than 10 minutes. In order to verify the comprehensibility of the choice-experiment design, I also conducted a personal interview with one employer in the industry, who was recruited by personal contact. Additionally, I conducted a pilot study (see Appendix B.2) in July 2020 with 9 participants in the correspondence study. No design issues became evident.

The survey was carried out in September 2020. Although the survey experiment was carried out two years after the correspondence test, I assumed that the labor market situation was similar. Although the COVID-19 pandemic and the subsequent lockdown had massive consequences for the German labor market (i.e., furlough schemes and layoffs), the economic situation in the construction industry remained stable overall (Gornig, Michelsen, and Pagenhardt 2021). During the debriefing process of the correspondence test study, I contacted 1,665 employers by email and invited them to take part

in the online survey.

The sample consisted of all firms that had full-time vacancies for a plant mechanic for sanitary, heating, ventilation, and air conditioning systems at the time of the correspondence test (see Chapter 5). After three reminders, 149 participants took part in the survey experiment. Thus, the response rate of 8.9% was significantly lower than was reported in other studies among employers (Baruch and Holtom 2008)[33]. Nevertheless, the dropout rate was moderate; 23.50% of respondents did not complete the survey. 484 valid choice tasks were available for the analyses. 133 evaluated at least one choice task.

Table 8 represents the summary statistics of the companies. 117 respondents answered the question regarding the business size: 15% had between 1 and 9 employees, around 45% had between 10 and 49 employees, 30% had between 50 and 249, and 10% and 250 or more employees. Of 116 respondents, around 80% of companies were located in West Germany. A substantial proportion of companies (18%) were from North Rhine-Westphalia federal state, which is also Germany's most populous federal state. Of 99 respondents who answered the question regarding the industry, about 55% stated that they belonged to the construction industry. Of the 111 respondents, 2/3 employed at least one "foreign" worker. Of 108 respondents, 2/3 had heard about the possibility of recognition, had dealt with this issue, or had/have employees with recognition. This was representative of the general population of German employers; in an employer survey in 2014, 30% stated that they had

[33]The low response rate might also have been due to the specific industry, construction, and the great distance between it and the academic sector.

never heard about recognition (Mergener 2018).

Table 8: Summary statistics: Firm characteristics

Variable	Obs.	Mean	Min.	Max.
Firm Size				
<10	17	0.15	0	1
10-49	52	0.44	0	1
50-249	36	0.31	0	1
>249	12	0.10	0	1
Location				
East	24	0.21	0	1
West	92	0.79	0	1
Industry				
Constr., Water, Elect.	58	0.55	0	1
Manufacturing, Wholesale	16	0.15	0	1
Accomm., RE, Educ., Arts, Public	10	0.9	0	1
Other[34]	22	20.75	0	1
Foreigners in the Company				
No	37	0.33	0	1
1	24	0.22	0	1
>1	50	0.45	0	1
Recognition knowledge				
No	33	0.30	0	1
Heard of	43	0.40	0	1
Dealt with	16	0.15	0	1
Experience in Recruiting	16	0.15	0	1

To assess the possible bias that may have resulted from selective participation, I conducted a comparison test. The survey sample does not differ significantly from the field experiment sample with regard the size, location, and industry. However, I could not rule out selection bias due to initial priming. The subject line of the email invitation to the survey was "Studie zur Fachkräftesicherung im Handwerk" [Study on attracting skilled labor in the craft trades]. It is possible that only companies that were honestly interested in securing skilled labor participated in the study.

7.2 Results Survey Experiment

To test whether employers preferred cheaper labor over workers with officially recognized qualifications, I used a conditional logit model, the workhorse of stated choice experiments. I estimated effects for two attributes, recognition (0=no recognition; 1=recognition) and wages (0=no information; 1=80% of Ecklohn, 2=Ecklohn). The conditional logit model presented in Table 9 (model 1) shows that employers, independent of the candidate's wage expectations, favored the candidate with recognition over the candidate without recognition. This result is also in line with the findings of a previous study (Damelang, Ebensperger, and Stumpf 2020). Contrary to assumptions, wage expectations did not play a role in considering a candidate. However, this result also aligns with another study claiming employers prefer average wages (Humburg and Van der Velden 2015). They argue that collective agreements (in Germany) keep employers from paying wages that are lower or higher than the collectively agreed ones. However, this argument assumes that the recruiter considers foreign employees skilled workers independent of their recognition status. If this were true, the recognition status should not have an effect at all. Further, Table 9 (model 2) shows the interaction between recognition and wage expectations. Contrary to the assumption that employers would favor the candidate who did not have a recognized qualification and thus had lower wage expectations, there was no interaction effect between the two attributes. Thus, German companies do not consider whether an applicant is more favorable if he or she is not recognized.

I will now check for preference heterogeneity or, in other words, answer

Table 9: Conditional Logit Model.

	Model 1	Model 2	Model 3
Recognition (Ref.: No)			
Yes	1.126***	1.127***	1.160***
	(8.03)	(3.40)	(7.77)
Wage (Ref.: No Information)			
Basic wage	-0.105	-0.111	-0.375
	(-0.64)	(-0.35)	(-1.66)
80%	0.0209	0.0281	-0.467
	(0.12)	(0.11)	(-1.36)
Interaction			
Recognition x Basic wage		0.0119	
		(0.02)	
Recognition x 80 %		-0.0153	
		(-0.04)	
Wage x Firm Size			0.185
			(1.92)
N	968	968	904

t statistics in parentheses

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

the question of whether wage expectations are relevant for companies of a particular size or particular industries. For instance, I expected small companies to be more price sensitive and to favor the candidate with lower wage expectations. A standard practice to explain the heterogeneity of preferences is to use interactions between attributes and respondents' characteristics. For this purpose, I ran a logit model, which includes interaction terms between wage expectations and the company's size. Table 9 (column 3) shows a heterogeneity effect, albeit one that is not significant at the conventional level.

In the next step, I run conditional logit models for various companies' sizes separately (for reasons of easier interpretation). The aim is to identify the company size at which wages matters most (see Table 10). Model 1 concentrates on small enterprises (1–9 employees), model 2 on medium-sized enterprises (10–49 employees), model 3 on (bigger) medium-sized enterprises (50–249 employees), and model 4 on large enterprises (250 or more employees). Interestingly, lower wages only mattered for companies with more than 250 employees, but the result was not statistically significant at the conventional level ($p<0.10$). Moreover, the lower wages (80% of Ecklohn) only mattered compared to no information on candidates' wage expectations. Moreover, lower wages sent a negative signal to businesses with between 10 and 49 employees. This runs contrary to my expectations but was in line with another study. Employers do not prefer candidates with lower wages compared to candidates with average wages (Humburg and Van der Velden 2015). The question remains: Why do lower wages only matter in medium-sized businesses? Moreover, "Ecklohn" provides a signal, but only

for (bigger) medium-sized enterprises (50–249 employees). It is possible that these companies are the only ones that are price insensitive and can afford the more "expensive" employee. Concentrating on the subgroups also reveals choice heterogeneity regarding recognition. The recognition matters less for companies between 10 and 49 employees and the most for businesses with employees between 50 and 249 employees. Here, too, one would expect that small firms would prefer a candidate with recognized qualifications as such candidates are assumed to have shorter adjustment periods in the job and less need for further training.

Table 10: Conditional Logit Model for subgroups.

	Model 1	Model 2	Model 3	Model 4
Recognition (Ref.: No)				
Yes	1.025**	0.762***	2.053***	1.604**
	(3.06)	(3.69)	(5.94)	(2.72)
Wage (Ref.: No Inf.)				
Basic wage	-0.0900	-0.467*	0.394	1.075
	(-0.17)	(-2.04)	(1.21)	(1.66)
80%	-0.370	-0.151	0.795*	0.636
	(-1.12)	(-0.53)	(2.25)	(1.02)
N	120	410	278	96

t statistics in parentheses

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

7.3 Summary and Conclusion

I conducted a choice experiment to test whether German employers preferred "unrecognized" skilled workers because they could pay them lower wages. Because I am aware that hiring intentions do not necessarily result

in hiring decisions (see a detailed discussion on this in the next chapter), this experiment instead aims to understand the determinants of the hiring decision-making process (Treischl and Wolbring 2022). Choice experiments are particularly well-suited to studying the human decision-making process. The results of this choice experiment confirm the existing empirical evidence from (Damelang, Ebensperger, and Stumpf 2020). For German employers, possessing a recognized qualification is more important than salary in the hypothetical hiring situation. This runs contrary to what happens in the actual hiring situation, where the recognition not only did not matter but even had a negative impact on hiring likelihood. Moreover, the experimental findings suggest that salary expectations did not play a role in the decision-making process. This seems unlikely and therefore calls into question the validity of the survey experiment or at least raises the question of how the discrepancy between the hypothetical and real hiring situation can be explained.

8 Does Recognition have Advantages for Employees?

While the two studies I have described so far focus on the effect of recognition of foreign qualifications in the hiring situation, the last part of the dissertation deals with whether the recognition of foreign qualifications contributes to a higher employment rate, income, and occupational status by analyzing survey data. Moreover, the higher number of cases in observational data and related diversity (i.e., data on country of origin or occupations) contribute to the external validity of the research. Survey data containing information on the recognition is rare. To the best of my knowledge, prior to the establishment of SOEP[35] migration, the only project to collect the data on recognition was "Labor Market Integration: Aussiedler and Jewish Immigrants from the Former Soviet Union in Germany and Israel" (Birkner 2011). Besides the recognition information, the SOEP migration surveys focus on all nationalities instead of only on former FSU nationalities, which is novel in Germany. In the next step, I describe the SOEP samples in detail.

8.1 Description of the IAB-SOEP & IAB-BAMF-SOEP Surveys

The IAB-SOEP Migration Panel, M1, was launched in 2013 and aimed to improve the representation of recent migrants in Germany in the SOEP (Socio-Economic Panel) survey. In the following years, the migration sample was

[35] I refer to SOEP when I speak about M1–M8 samples.

expanded to include "newer" migration groups (EU Enlargement) (M2 & M8), refugees (M3–M6), and, most recently, highly skilled workers (M7). In the following section, I present the respective samples and elaborate in detail on the possible constraints of the samples regarding my research question.

8.1.1 IAB-SOEP Migration Survey

The first IAB-SOEP Migration Sample, M1, started in 2013 and oversampled migrant groups that arrived in Germany after 1995 and second-generation migrants born after 1976 (Brücker, Kroh, et al. 2014; Kroh, Kühne, Goebel, et al. 2015). The project aimed to better represent recent immigrant groups living in Germany, which was important given that the last SOEP migration sample (Sample D) was drawn in 1994/1995. Although SOEP surveys regularly add refresher samples, immigrants are usually underrepresented in the refresher samples due to the small size of immigrant groups compared to the majority. In 2012, one year before the IAB-SOEP Migration Sample (M1), only 1,945 immigrants participated in the survey (Brücker, Kroh, et al. 2014). To ensure an adequate number of cases, immigrants from certain countries—i.e., Poland, Romania, the successor states from the former Soviet Union, the southern European countries (Greece, Italy, Spain, and Portugal), Arab and Islamic countries, and "traditional" guest workers—were oversampled. The initial sample has around 5,000 first- and second-generation individuals and is therefore assumed to be the largest longitudinal survey of immigrants and their descendants. Because of its sample size, this sample is especially well suited to answering the research question of whether recogni-

tion of foreign qualifications facilitates labor market outcomes. However, the IAB-SOEP Migration Sample did not ask respondents which specific occupation or field of study they were trained in. This information would have allowed us to identify the recognition effects for regulated and unregulated occupations separately and, hence, to determine the actual signalling effect of occupational recognition. In the third wave (2015), the respondents were asked about their occupation practices in their country of origin. This information can be used as a proxy for the occupation they are trained in. However, due to panel attrition, 23% between waves 1 and 2 and 18% between waves 2 and 3, the sample size declined to 3,136 persons in 2015 (Siegers, Steinhauer, and Schütt 2022). Since only a few SOEP panel members [36] go through the recognition process, the loss of a single participant is notable for my research question. Moreover, since the launch of the sample was in 2013 and the recognition reform was only in April 2012, most of the respondents, 80%, who applied for recognition did it under the old regulation (Brücker, Glitz, et al. 2021).

In 2015, the IAB-SOEP Migration Sample was expanded for the first time. The refresher sample, M2, aimed to represent the recent migrant groups who had arrived in Germany between 2009 and 2013. Since the EU enlargement primarily drove migration in those years in Germany, migrants from Bulgaria and Romania were oversampled; the same applies, although to a lesser degree, to migrants from southern European countries. In total, 1,689 respondents were added. The M2 sample is the only one with information on the occupation the respondents were trained for in their country of origin.

[36] In the eight samples, the proportion varies between 18% and 38%

Unfortunately, the sample is too small to identify enough individuals with recognized qualifications and hence derive substantial effects of recognition of foreign qualifications. This might be because only particular groups were entitled to get their foreign qualification recognized before the reform in 2012.

In 2020, two further migration samples, M7 and M8, were added. Similar to M2, the target population for M7 is represented by recent migrants from Poland, Romania, and Bulgaria who migrated to Germany between 2016 and 2018. 895 respondents participated in the first wave. Although the sample seemed promising at first glance, as it covered recognition under the new act, it has some drawbacks that make it even less suitable for answering my research question. First, it has a small sample size. Second, it lacks information on the occupation practiced in the country of origin.

In 2020, sample M8 was added. This is the most innovative sample, as it targets third-country immigrants who moved to Germany as skilled workers between 2019 and January 2020. This sample consists primarily of skilled workers with university degrees or vocational diplomas in occupations with substantial labor demand, since other groups were not entitled to work in Germany before the Skilled Worker Act was launched in March 2020. In total, 1,096 respondents participated in the first wave. This sample was the least suited for my purposes as it only targeted professions with labor shortages, which could lead to a biased recognition effect. Moreover, and even more importantly, only those with recognized qualifications could move to Germany and work there before March 2020.

The initial data set of all samples discussed above consisted of 9,923 re-

spondents who participated in the survey at least once. Since I was only interested in participants with foreign qualifications, I restricted the sample to foreign-born individuals (omitting 1,937 respondents). Although one may argue that individuals born in Germany could have acquired their qualifications abroad, these individuals differ from the ones I am interested in. Because of their favorable characteristics, i.e., knowledge about the German labor market etc., these individuals are not comparable to the "classic" migrants, and these differences might not entirely be caught through control variables.

In the next step, I excluded persons with no education abroad (omitting 4,487 respondents) and those with missing information on qualifications (omitting 313 respondents). The survey respondents were questioned about their foreign qualifications in different survey years. I decided to focus on the initial information (first spell) because I was worried about a higher rate of people who may have stated they had no foreign qualification to minimize the survey time. Finally, I only considered observations for individuals aged 65 or younger. The data set ultimately had 3,186 respondents for the four samples (see Table A3).

8.1.2 IAB-BAMF-SOEP Survey of Refugees (M3–M6)

After the so-called refugee crisis in Germany in 2015, two IAB-BAMF-SOEP Surveys of Refugees (M3 and M4) were launched in 2016. Both samples targeted the population of refugees who arrived in Germany between 2013 and January 2016 and were already registered in the Central Register of Foreign-

ers (AZR). However, M4 targeted more families, as underage children were sampled as crucial informants; 4.527 adults participated in the first wave (Kroh, Kühne, J. Jacobsen, et al. 2017). Only one year later, a booster sample was added. In 2017, the M5 survey was launched to target refugees who came to Germany between 2013 and 2016—making it similar in some respects to M3 and M4—but who registered later at the AZR and those who came after January 2016, up to the end of 2016 (J. Jacobsen et al. 2019). 2,252 adults took part in the survey in the first wave (Rathje and Glemser 2021a). Another refresher sample was launched in 2020, which aimed to supplement M3–M5. The M6 sample covers refugees who came to Germany between January 2013 and June 2019. This added to the previous M3–M6 samples and meant newcomers could be considered (Steinhauer et al. 2022). 1,216 respondents participated in the first interview (Rathje and Glemser 2021b). In general, the refugee sample was well suited for answering my question as the sample size is big enough. Moreover, most respondents came to Germany after the Recognition Act in 2012. However, the recognition effects are potentially biased since refugees have limited access to the German labor market. Their labor market access depends on their resident status, occupation, and length of stay. In addition, most refugees came from countries where vocational training does not exist, making recognition of their qualifications more difficult and impeding labor market access at the medium qualification level. What's more, similar to the old immigrant, new EU immigrant, and third-country immigrant samples, this sample also lacks information on the occupation, regulated or not.

The original data set encompassed 9,897 individuals in the four samples. As I did for the migration sample, I excluded German-born individuals (omitting 15), individuals with no education abroad (omitting 7,933[37]), and individuals with missing information regarding foreign qualifications (omitting 640). Similar to migration samples, I further only considered observations for individuals not older than 65. The final data set contains 1,309 observations.

8.2 Operationalization of Dependent and Independent Variables

First of all, I clustered the eight samples into four migrant samples: Old immigrants (M1), EU immigrants (M2 & M7), refugees (M3–M6), and third-country immigrants (M8). The reason for summarizing the groups is mainly due to differences in survey questionnaires between the samples.

8.2.1 Dependent Variables

Employment status First of all, I focused on the employment rate of immigrants as the dependent variable. I operationalized employment status as a dummy variable, taking the value of 1 if the individual had full- or part-time employment at the last observation and 0 if they were not employed and either registered as unemployed or provided no further information on their

[37]The relatively high number of refugees without a foreign qualification is because vocational training does not exist in their country of origin (Brücker, Fendel, et al. 2020). These younger people did not manage to finish their education because of the conflicts at home (Brücker, Rother, Schupp, et al. 2016) but also because there were fewer educational opportunities in their countries (Schmidt, Kristen, and Mühlau 2022)

unemployment status or had irregular part-time employment. I therefore excluded those in vocational training, in compulsory civilian or military service, on maternity leave, and older than 65 years old (SOEP Group 2022). Note, it is unclear whether employment was taken up before or after the recognition of foreign qualifications. Although the data indicates when the recognition process ended, it does not indicate when employment started.[38]

Monthly wages My second dependent variable is monthly wages. However, it only applies for the respondents who were in (full-time or part-time) employment in the last observation. These respondents were asked to give information about gross monthly earnings from the previous month from their main employment without one-time payments but including overtime pay. I analyze the hourly wages and use the standard approach: dividing the gross monthly earnings by actual work time per week multiplied by 4. Moreover, I followed the standard approach, considering the wages in logged form to measure percentage changes in wages rather than absolute changes in wages.

International Socio-Economic Index of Occupational Status (ISEI) is a measure of socio-economic status, which was developed in 1992 by Ganzeboom, De Graaf, Treiman, and De Leew based on information about income, education, and occupation (Ganzeboom, De Graaf, and Treiman 1992) and ranges between 11 and 90. In the SOEP, this variable reflects the (last reached) ISEI for all employed persons. The question was asked in the first wave and otherwise only when the respondents reported having either

[38]Looking at the administrative data would have allowed us to track down employment information daily; however, in the same vein, it would have substantially diminished the observation cases.

changed jobs or taken up a position after unemployment; in other cases, information from the previous year was used (SOEP Group 2022).

8.2.2 Independent Variables

Recognition of foreign qualification is the main independent variable. I differentiated between those who had never applied for recognition (0), those for whom recognition was unsuccessful (1), those who attained partial recognition[39] (2), and those who got full recognition (3). I only considered qualification recognition that was completed before the initial interview and not recognition procedures completed during the panel period. Moreover, in the IAB-BAMF-SOEP (M3–M6) sample, the respondents were also asked in 2018, 2019, and 2020 whether they had applied for recognition of their foreign qualification since the last interview. I refer to this information as well[40]. In other samples, the information relating to recognition status was only elicited once.

Educational attainment was one of the major control variables in my analyses. Since all the dependent variables I was interested in are to some degree dependent on education level, it was necessary to control for these variables. Moreover, the independent variables in my analysis were potentially confounding variables and therefore needed to be controlled for. In contrast to other studies on official recognition (Brücker, Glitz, et al. 2021; Kogan 2012; Tibajev and Hellgren 2019), which only control for education acquired abroad, I differentiated whether the education was obtained abroad

[39] Those who eventually got full recognition are in the group of full recognition

[40] Those who stated that they had not got the decision yet were excluded.

or in Germany. Instead of relying on the ISCED variable, which the SOEP provides, I generated the education variable based on response options for the education question in the IAB-(BAMF)-SOEP survey. This has the advantage of considering educational credentials at all levels and not only the highest educational credential obtained, as is the case in ISCED.[41] Moreover, the ISCED provides no information on whether the education was obtained in Germany or abroad. This is crucial since the origin of the training influences the different returns to training. Thus, I differentiated between other education (0), extended apprenticeship (1), dual vocational training (2), vocational school (3), (applied science and traditional) university (4), and doctoral studies (5).

Labor market experience is at least as important as educational attainment when looking at immigrants' labor market participation. According to the educational attainment variable approach, I differentiated between work experience measured in years in full- or part-time employment before or after migration.[42] The two variables measured labor market experience in years with months in decimal form.

I further controlled for *German proficiency* as German language skills, mainly as it is also considered host country human capital (Esser 2006). For this purpose, I generated an additive index based on the respondents' self-rated speaking, reading, and writing skills based on the respondent's last available information regarding German proficiency. Each scale ranges

[41] It is possible that immigrants may not apply for recognition of their highest educational diploma if recognition success is assumed to be higher for this occupation

[42] I used the pgexpft and pgexppt variables from the Pgen dataset.

from 0 (*very good*) to 5 (*not at all*). However, I reversed the scale before generating the index to enable a more straightforward interpretation. Thus, a greater value indicates a higher level of German proficiency. The index takes values between 0 and 15. The items show high internal consistency with a Cronbach's Alpha around 95 (Kosyakova, Kristen, and Spörlein 2022). Since the respondents were regularly asked about their language skills, I only utilized the last available information.

Because I was aware of self-selection into the treatment group based on unobservable characteristics, I also controlled for *cognitive skills*. I operationalise cognitive skills with two variables, Symbol digit test and Math grades. The Symbol-Digit test (SDT) consist of matching as many numbers as possible to graphical symbols in 90-second time interval. The variable is coded as number of correct matches (Lang et al. 2007). The measure were standardized, with a mean of zero and a standard deviation of one. However, the symbol digit test was carried out in 2016, when a big part of M1 respondents either already dropped out or did not take part in the 2016 survey. Thus, I used the operationalization of Kosyakova et al. (2022) and measure cognitive skills via math grades in the last school report. The answer categories ranged from 1 to 6; lower values indicated better grades. As I did for the German proficiency variable, I reversed the scale to enable a more straightforward interpretation. The disadvantage of math grades is that they were only surveyed in the IAB-SOEP Migration Sample. Moreover, for the reasons stated above, I also controlled for age at migration, since official recognition at a younger age likely pays off more.

8.3 Statistical Techniques

Despite the longitudinal structure of the data, I chose a cross-sectional design. This was motivated by the sample size restriction. First, as indicated in the previous sections, all M1–M8 samples had case numbers that were too low to answer my research question. Low case numbers were due to panel attrition, which is particularly apparent in the longitudinal analyses. Thus, I focus on the medium-term (for newcomers) and long-term effect of the recognition (for older migration cohort) in the following.

I had to estimate fixed-effect models to benefit from the strength of longitudinal analyses. However, for these models, measures of the outcome variables before the treatment were essential. Since almost all M1 respondents had undergone the recognition process long ago, there was missing information on variables such as income or ISEI before the treatment. Therefore, I ran a series of linear regression models for the different samples. First, I conducted linear regressions to estimate the effect of recognition on employment status.[43] Then, for those employed at least once, I conducted a linear regression to estimate the effect of recognition on income and ISEI. The main regressor in these analyses was recognition. Selection bias was a crucial problem in estimating the causal effect of recognition on economic success. Individual characteristics can explain economic success. Therefore, I handle this issue by controlling for cognitive skills. Moreover, I controlled for further confounding variables, i.e., educational level. I addressed the missing data issue by applying the listwise deletion method.

[43]Similar to the procedure in a field experiment, I conducted a least squares model on the binary dependent variable

8.3.1 Descriptive Statistics

Table 11 and Table 12 provide descriptive statistics for the four samples and four subgroups within the sample. The four samples contained 4,109 individuals, of whom 572 received full recognition, 295 received partial recognition, 190 applied but were not granted recognition, and 3,052 never applied for recognition.

Since the differences between the samples were not the focus of the dissertation project, I refrained from focusing on them. What is more interesting for my dissertation purpose were the differences between the subgroups (non-applicant, no recognition, partial recognition, and complete recognition), and there was only slight variation between the samples in this regard. Because the subsamples of immigrants whose application was denied or whose qualifications were only partially recognized were too small and thus of little relevance, I focused on the differences between the subgroup who eventually succeeded in getting the full qualification recognition and those who never tried. The higher the qualifications, the higher the proportion of those who succeeded in gaining recognition, regardless of the sample. Of those who have university degrees, 25% ("old" immigrant cohort) succeeded in getting full recognition; not even 10% of those with vocational training did so. A similar pattern can be seen for the other three samples. However, the differences were less pronounced. Labor force experience in the country of origin exhibited a reverse pattern compared to education. Those with less experience tended to seek recognition. This pattern makes sense since these are the people who invested in education. There were some differences in German language

competencies between the subgroups. In all samples, immigrants with full recognition stated that they had higher German proficiency than those in the nonapplicant subgroup. Moreover, on average, those who succeeded in gaining recognition were two years younger at the time of migration than those who never tried to get their qualifications recognized. Math grades differed only slightly between the two subgroups. Moreover, the subgroup with recognized qualifications reported having achieved German qualifications more often (around 30%). It is possible that this qualification helped them to achieve full recognition. The subgroups were similar in regard to labor market experience in Germany. Only in the sample of the "old immigrant" group did those with full recognition have more labor market experience.

Table 11 and Table 12 also provide information about immigrants' labor market outcomes, such as employment rate, hourly wages, and socioeconomic status. In all samples, the employment rate was highest in the full recognition group. The same applies to wages and ISEI. The wages and the ISEI were highest in the fully recognized subgroup in all considered samples.

Table 11: Distribution of Dependent and Independent Variables by Recognition Subgroup

	Old immigrants					EU immigrants				
	N	Non-Appl.	No	Partly	Full	N	Non-Appl.	No	Partly	Full
Education (%)	1,374					988				
Other		77.06	8.89	1.69	12.35		72.77	8.42	18.81	0.00
Training		90.99	6.55	0.00	2.47		97.19	0.00	2.81	0.00
Apprenticeship		79.09	3.15	4.88	12.89		89.56	3.04	7.26	0.15
Vocational		78.29	8.36	3.59	9.76		90.16	0.68	6.96	2.19
University		59.65	7.46	7.39	25.51		79.81	2.27	13.66	4.26
Doctoral		55.40	1.99	1.79	40.82		66.23	1.10	28.47	4.19
LFE in CO (in years)	1,358	8.93	6.51	7.05	5.37	967	6.93	8.28	4.91	4.48
German proficiency	1,363	10.84	11.27	11.66	12.71	961	9.99	11.84	11.67	10.54
Age at immigration	1,363	32.22	29.42	29.55	29.71	972	31.48	32.00	31.03	27.72
Math	1,008	4.69	4.79	4.95	5.14	943	4.72	3.75	5.37	4.80
Education in Germany	1,373	12.18	18.94	52.01	30.52	988	10.91	34.71	19.15	39.73
LFE in DE (in years)	1,368	8.86	7.99	6.71	10.71	982	3.61	4.44	4.36	3.12
Measures of labor market success										
Employed (%)	1,240	71.37	69.69	79.98	86.22	918	81.21	95.10	82.09	99.77
Wage	900	15.61	17.68	15.34	21.25	721	17.31	15.46	21.85	13.32
ISEI	911	35.96	39.02	46.00	63.18	595	42.66	41.69	65.89	56.75

(table continued on the next page)

Table 12: Distribution of Dependent and Independent Variables by Recognition Subgroup (continuing)

		Refugees					Third-country immigrants			
	N	Non-Appl.	No	Partly	Full	N	Non-Appl.	No	Partly	Full
Education (%)	1,125					509				
Other		97.70	0.00	2.30	0.00		30.68	27.65	3.61	38.06
Training		96.34	0.00	3.66	0.00		84.39	0.00	0.00	15.61
Apprenticeship		98.46	0.15	0.79	0.60		87.92	0.00	3.74	8.34
Vocational		91.65	0.88	1.08	6.39		69.66	1.34	2.97	26.03
University		75.76	2.11	7.40	14.73		59.70	3.74	7.19	29.37
Doctoral		64.61	2.20	18.56	14.64		60.86	8.17	4.67	26.31
LFE in CO (in years)	1,114	8.20	3.81	7.00	4.92	476	6.29	5.28	2.43	4.61
German proficiency	1,126	9.76	12.05	11.62	12.22	509	6.79	7.38	11.65	7.90
Age at immigration	1,126	33.82	31.53	32.84	31.84	479	31.20	29.72	28.31	29.73
Math grade					5.14	464	4.96	4.63	4.81	5.20
Education in Germany	845	6.37	10.36	2.67	7.89	509	5.67	0.00	13.04	10.05
LFE in DE (in years)	1,113	0.72	0.75	6.71	1.07	493	1.57	0.90	1.12	1.58
Measures of labor market success										
Employed (%)	1,050	29.05	50.20	36.06	62.08	456	90.99	100.00	98.88	94.22
Wage	247	12.25	10.35	13.35	16.14	420	18.88	21.92	16.13	22.20
ISEI	300	31.44	42.18	33.07	48.24	282	51.82	61.90	54.99	62.09

8.3.2 Multivariate Analyses

Table 13 to Table 19 show the results of regressions for recognition effects on employment, wage, and occupational status for the four migration samples. Moreover, two different models are estimated for the three outcomes. The first models regress a person's employment status, log wage, and occupational standing on recognition and human capital (education level, working history) acquired in the country of origin. Moreover, it also controls for age at migration, German language skills before migration, and math grades. The second model further accounts for human capital (education and labor market experience) obtained in Germany to test the robustness of the findings from the first model.

Older Migration Cohort

As seen from Table 13, obtaining full occupational recognition does not increase the chances of being active in full or part-time employment among older migrant cohorts. Other relevant determinants, like German language competence and age at migration, are more relevant for labor market integration. Moreover, when controlling for education and labor market experience gained in Germany, it becomes obvious that these are the determinants that matter for employment. This finding suggests that the economic rewards are higher when immigrants obtain German human capital than when their foreign qualifications are recognized and is in line with previous evidence, which showed that host-country credentials do instead substitute than complement foreign credentials (Kanas and Tubergen 2014). Furthermore, foreign human capital, particularly having completed an apprenticeship, has a negative ef-

Table 13: Recognition and labor force participation (Old Immigrants)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	-0.0453	-0.0535
	(-0.91)	(-1.12)
Partial Recognition	0.0968	0.0765
	(1.61)	(1.31)
Full Recognition	0.0635	0.0370
	(1.63)	(0.98)
Premigration education (Ref.: Other)		
Training	-0.232	-0.263*
	(-1.81)	(-2.13)
Apprenticeship	-0.165	-0.188*
	(-1.79)	(-2.12)
Vocational	-0.0526	-0.0750
	(-0.58)	(-0.85)
University	-0.0480	-0.0713
	(-0.53)	(-0.81)
Doctoral	0.151	0.0871
	(1.20)	(0.71)
Premigration labor force experience	0.00146	-0.00224
	(0.37)	(-0.58)
German proficiency	0.0103**	0.00662
	(2.72)	(1.78)
Math grades	0.0217	0.0182
	(1.30)	(1.13)
Age at immigration	-0.00979*	-0.00458
	(-2.55)	(-1.22)
Postmigration education		0.0992**
		(2.61)
Postmigration labor force experience		0.0152***
		(8.04)
Constant	0.940***	0.736***
	(6.25)	(5.00)
Observations	886	886

t statistics in parentheses

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

fect on being employed that is statistically significant at the 10% level. This result confirms the empirical evidence from the survey experiment, where some employers said they would rather hire candidates without recognition than train them.

The wages and occupational standing are more important than the employment rate, which provides no insight into the quality of employment. Table 14 suggests that full recognition raises wages by 17.2% (15.9 log points). Even after controlling for German human capital, the recognition effect remains stable. Moreover, unlike in the case of labor market participation, education obtained abroad, in particular a doctoral degree, has a strong positive effect (117.8% and 100.4 log points) on wages.

Similar patterns can be seen in the case of occupational status. Column 3 suggests a positive recognition effect. The full recognition increases occupational standing by 10.65 ISEI points on the scale range between 16 and 90, and it is, like income, stable over the different model specifications. Moreover, although math grades had no effect in prior analyses, they increased occupational status by three ISEI points, regardless of the model specification. German language skills also had a positive effect on occupational status but not wages; due to the small effect size (around 0.7 ISEI points), it can be neglected. Moreover, education acquired in Germany has a higher effect on log wage and occupational standing than labor market experience gained in Germany.

Table 14: Recognition and labor market outcomes (Old Immigrants)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	-0.0154	-0.0225	-1.630	-2.273
	(-0.22)	(-0.34)	(-0.64)	(-0.90)
Partial Recognition	0.0316	0.0145	2.407	0.813
	(0.41)	(0.19)	(0.85)	(0.29)
Full Recognition	0.159**	0.137**	10.65***	9.922***
	(3.10)	(2.76)	(5.77)	(5.35)
Premigration education (Ref.: Other)				
Training	0.208	0.136	4.570	4.032
	(1.12)	(0.76)	(0.68)	(0.60)
Apprenticeship	0.197	0.150	2.817	2.640
	(1.63)	(1.29)	(0.64)	(0.61)
Vocational	0.233*	0.215	1.685	1.546
	(1.97)	(1.89)	(0.39)	(0.36)
University	0.471***	0.449***	19.31***	18.87***
	(3.97)	(3.94)	(4.49)	(4.41)
Doctoral	1.005***	0.941***	38.02***	38.41***
	(6.34)	(6.18)	(6.69)	(6.78)
Premigration labor force experience	-0.00794	-0.0126*	-0.382	-0.365
	(-1.36)	(-2.22)	(-1.84)	(-1.75)
German proficiency	0.00843	0.00460	0.731***	0.642***
	(1.65)	(0.92)	(3.97)	(3.45)
Math grades	0.0573*	0.0544*	2.921***	2.704**
	(2.49)	(2.46)	(3.52)	(3.26)
Age at immigration	-0.00504	0.000528	-0.0912	-0.0566
	(-0.89)	(0.10)	(-0.45)	(-0.28)
Postmigration education		0.0874		5.560**
		(1.77)		(3.01)
Postmigration labor force experience		0.0194***		0.00240
		(7.52)		(0.02)
Constant	2.134***	1.875***	14.31	14.18
	(10.35)	(9.34)	(1.93)	(1.89)
Observations	647	647	656	656

t statistics in parentheses

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

European newcomers

Table 15 and Table 16 suggest similar effects for European newcomers (M2 & M7). As was evident in the "old immigrant group," full recognition of foreign qualifications does not affect labor market integration for European newcomers. The effect remains stable even after controlling for human capital acquired in Germany. However, other factors drive the labor market outcomes here, unlike in the old immigrant sample. For instance, labor market experience gained in the country of origin impacts labor market incorporation in this sample but has no effect in the old migration sample (M1). At this point, it is necessary to understand that the impact may diminish with the duration of stay. Moreover, the effect should not be overrated, as the effect size is close to zero. The same applies to the impact of the age of migration, but the effect is negative.

However, different patterns can be seen for hourly wages. Partial recognition increased wages by 13.88 % (13.0 log points) compared to not even seeking recognition. The results here demonstrate that many employers seem to use the information as a screening device. It is possible that partial recognition pays off more since the employer is not required to pay the foreign employee with partial recognition as skilled labor as would be the case for an employee with fully recognized qualifications. The effect remains stable, even after controlling for German human capital. Moreover, a doctoral degree has a positive impact on hourly wages. German language competence and math grades likewise have a positive effect.

Turning to occupational status, I found similar effects of recognition. I

Table 15: Recognition and labor force participation (EU Immigrants)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	0.113	0.109
	(1.27)	(1.24)
Partial Recognition	0.0394	0.0307
	(0.90)	(0.71)
Full Recognition	0.0514	0.0530
	(0.59)	(0.61)
Premigration education (Ref.: Other)		
Training	0.143	0.145
	(1.17)	(1.20)
Apprenticeship	0.269**	0.254*
	(2.61)	(2.51)
Vocational	0.217*	0.203*
	(2.21)	(2.09)
University	0.247*	0.248**
	(2.55)	(2.60)
Doctoral	0.323**	0.315**
	(2.90)	(2.87)
Premigration labor force experience	0.0115***	0.00911**
	(3.93)	(3.12)
German proficiency	0.00615	0.00555
	(1.50)	(1.36)
Math grades	0.00715	0.000831
	(0.52)	(0.06)
Age at immigration	-0.0115***	-0.00876**
	(-4.10)	(-3.10)
Postmigration education		-0.0117
		(-0.24)
Postmigration labor force experience		0.0208***
		(5.10)
Constant	0.783***	0.686***
	(5.74)	(5.05)
Observations	833	833

t statistics in parentheses

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

Table 16: Recognition and earning and occupational standing (EU Immigrants)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	-0.119	-0.120	-4.641	-4.822
	(-1.14)	(-1.16)	(-0.99)	(-1.02)
Partial Recognition	0.130*	0.117*	14.32***	14.11***
	(2.43)	(2.20)	(6.21)	(6.10)
Full Recognition	-0.0614	-0.0581	9.549	10.10
	(-0.60)	(-0.57)	(1.53)	(1.62)
Premigration education (Ref.: Other)				
Training	0.214	0.227	-1.375	-1.317
	(1.27)	(1.36)	(-0.19)	(-0.18)
Apprenticeship	0.184	0.190	-3.015	-3.044
	(1.27)	(1.33)	(-0.49)	(-0.49)
Vocational	0.137	0.140	-1.742	-1.777
	(0.97)	(1.01)	(-0.29)	(-0.30)
University	0.462***	0.479***	17.77**	17.92**
	(3.32)	(3.48)	(3.00)	(3.02)
Doctoral	0.538***	0.546***	31.95***	31.75***
	(3.51)	(3.60)	(4.60)	(4.57)
Premigration labor force experience	0.00131	-0.00133	-0.404*	-0.453*
	(0.33)	(-0.33)	(-2.09)	(-2.32)
German proficiency	0.0161**	0.0156**	0.732**	0.718**
	(3.09)	(3.02)	(2.99)	(2.91)
Math grades	0.0704***	0.0656***	2.503**	2.357**
	(4.06)	(3.82)	(3.09)	(2.90)
Age at immigration	-0.00296	-0.000212	-0.0314	0.0200
	(-0.76)	(-0.05)	(-0.17)	(0.10)
Postmigration education		-0.0207		0.513
		(-0.35)		(0.19)
Postmigration labor force experience		0.0236***		0.416
		(4.42)		(1.70)
Constant	1.951***	1.817***	17.97*	15.88
	(10.26)	(9.56)	(2.07)	(1.81)
Observations	657	657	554	554

t statistics in parentheses

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

only detected a positive effect for partial recognition. Occupational standing increased by 14 ISEI points if immigrants had a partially recognized foreign qualification compared to if they had never applied for recognition. Full recognition had no significant effect. Apparently, partial recognition also increased the occupational standing. It is possible that those who got partial recognition will ultimately pursue full recognition, which will lead to employment as skilled labor. A closer look confirms the assumption. Indeed, almost half were in a so-called regulated occupation. Thus, they are required to achieve full recognition in order to be employed in the occupation [44]. The question remains, however, why full recognition did not provide the same effect. This might be due to the low cases (only 25 individuals achieved full recognition).

Moreover, educational level, more precisely, having a degree from a applied science and traditional university and a doctoral degree increases the occupational status by 17 (applied science and university degree) and 32 (doctoral degree) ISEI points. German language proficiency and math grades also had positive effects. However, the effect magnitude was relatively low. Furthermore, based on the results presented in Table 16, labor force experience acquired in Germany seems to matter for wages as well.

Third countries immigrants

For completeness, I also show a regression of labor market participation on recognition. Table 17 shows no recognition effect for professionals from third countries (M8). This is hardly surprising, considering the M8 sample

[44]Unfortunately, the question regarding the recognition status was only asked in the first interview.

Table 17: Recognition and labor force participation (Third-country Immigr.)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	0.0685	0.0821
	(0.83)	(1.00)
Partial Recognition	0.0171	0.0156
	(0.35)	(0.32)
Full Recognition	0.0210	0.0186
	(0.81)	(0.72)
Premigration education (Ref.: Other)		
Training	-0.00140	-0.0383
	(-0.01)	(-0.25)
Apprenticeship	0.00679	-0.0307
	(0.07)	(-0.32)
Vocational	-0.0409	-0.0533
	(-0.49)	(-0.64)
University	-0.0511	-0.0618
	(-0.66)	(-0.80)
Doctoral	-0.0343	-0.0466
	(-0.41)	(-0.56)
Premigration labor force experience	0.00288	0.00281
	(0.80)	(0.78)
German proficiency	0.00354	0.00391
	(1.15)	(1.28)
Math grades	0.00412	0.00570
	(0.32)	(0.44)
Age at immigration	-0.00150	-0.00222
	(-0.44)	(-0.65)
Postmigration education		-0.0739
		(-1.54)
Postmigration labor force experience		0.0296*
		(2.32)
Constant	0.962***	0.953***
	(7.31)	(7.28)
Observations	377	377

t statistics in parentheses

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

focused on immigrants only eligible to migrate to Germany with a valid employment contract. However, full recognition increased hourly wages among employed people, by 16% on average (14.8 log points), even after accounting for human capital acquired in Germany (Table 18). Moreover, full recognition also increased occupational standing by 11 ISEI points, independent of the model specification. Higher math grades also improved wages and occupational status. For instance, an increase in math grades by one score increased occupational status by four ISEI points. Surprisingly, better German competencies had a negative effect on hourly wages and occupational standing. German labor force experience did not have an effect on wages. Since the immigrants in this sample only migrated to Germany between 2019 and 2020, it is possible that the duration spent in Germany (a maximum of two years prior to the survey) is too short to see effects.

Refugees

Finally, I focus on the effect of recognition on refugees in the labor market (M3–M6). Here, I did not control for math grades and education acquired in Germany because this information was not collected for this sample or was collected in the later panel waves. Because of the panel attrition, the data from the first wave was used in further analyses. As seen in Table 19, a person with full recognition had a 26 percent higher likelihood of holding a full or part-time position. The most striking observation from the analyses is that having unsuccessfully sought recognition positively affected labor market participation compared to never having tried. This effect is similar to the one found in the EU newcomers sample, and I only can speculate about the

Table 18: Recognition and earning and occupational standing (Third-country immigrants)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	0.143	0.156	8.028	8.363
	(0.92)	(1.00)	(1.14)	(1.17)
Partial Recognition	-0.0403	-0.0451	3.323	3.394
	(-0.42)	(-0.47)	(0.70)	(0.71)
Full Recognition	0.148**	0.148**	11.43***	11.48***
	(2.91)	(2.90)	(4.33)	(4.32)
Premigration education (Ref.: Other)				
Training	-0.0443	-0.0631	-44.77*	-44.83*
	(-0.15)	(-0.22)	(-2.30)	(-2.29)
Apprenticeship	-0.122	-0.147	-14.92	-15.40
	(-0.68)	(-0.80)	(-1.65)	(-1.68)
Vocational	-0.0888	-0.112	-10.18	-10.46
	(-0.56)	(-0.70)	(-1.34)	(-1.37)
University	0.220	0.204	6.711	6.525
	(1.50)	(1.37)	(0.95)	(0.92)
Doctoral	0.196	0.183	14.03	13.91
	(1.23)	(1.14)	(1.82)	(1.80)
Premigration labor force experience	0.00593	0.00533	-0.148	-0.151
	(0.85)	(0.76)	(-0.41)	(-0.42)
German proficiency	-0.0215***	-0.0223***	-1.023***	-1.033***
	(-3.63)	(-3.72)	(-3.51)	(-3.50)
Math grades	0.0983***	0.0968***	4.573***	4.544***
	(3.89)	(3.81)	(3.59)	(3.50)
Age at immigration	0.00186	0.00258	-0.264	-0.263
	(0.28)	(0.39)	(-0.77)	(-0.76)
Postmigration education		0.0934		1.089
		(0.96)		(0.23)
Postmigration labor force experience		0.0155		0.457
		(0.61)		(0.32)
Constant	2.268***	2.253***	41.65**	41.40**
	(8.98)	(8.89)	(3.16)	(3.11)
Observations	352	352	244	244

t statistics in parentheses

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

Table 19: Recognition and labor force participation (Refugees)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	0.266**	0.217*
	(2.80)	(2.35)
Partial Recognition	0.0784	0.0543
	(1.34)	(0.96)
Full Recognition	0.265***	0.232***
	(6.03)	(5.42)
Premigration education (Ref.: Other)		
Training	0.0170	-0.0275
	(0.17)	(-0.29)
Apprenticeship	-0.115	-0.132
	(-1.31)	(-1.55)
Vocational	-0.0315	-0.0530
	(-0.40)	(-0.70)
University	-0.0503	-0.0778
	(-0.71)	(-1.13)
Doctoral	-0.0607	-0.0803
	(-0.66)	(-0.90)
Premigration labor force experience	0.00862***	0.00840***
	(3.52)	(3.53)
German proficiency	0.0180*	0.0157
	(2.02)	(1.82)
Age at immigration	-0.0126***	-0.0127***
	(-5.35)	(-5.57)
Postmigration labor force experience		0.0828***
		(8.07)
Constant	0.625***	0.605***
	(6.25)	(6.23)
Observations	1026	1026

t statistics in parentheses

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

reasons. It is possible that those immigrants were particularly motivated to take up employment due to their failed recognition. Other factors, like labor market experience in the country of origin, German language proficiency, and age at migration, showed effects; however, the effect magnitude was close to zero. Model 2 analyzes the German labor market experience as well, finding a positive effect.

In the next step, I analyze whether the recognition of foreign qualifications improves income and occupational status. Table 20 shows that full recognition had no effect on income. The same pattern was evident for German language skills and age at migration. Model 2 tested the hypothesis of whether labor market experience gained in Germany had an influence on the recognition effect. However, the effect remained stable in magnitude and statistical relevance. In models 3 and 4, I examined the recognition effect on occupational status. As Table 20 (Column 3 and 4) shows, occupational status increased by 15 points when immigrants with foreign qualifications succeeded in getting full recognition. Moreover, partial recognition also increased occupational standing. Having a doctoral degree even improved occupational status by 23 ISEI points. Increasing German language proficiency by one score also increased occupation status by two ISEI points. Full recognition remained stable even after controlling for German labor market experience. Other determinants also remain stable.

Table 20: Recognition and earning and occupational standing (Refugees)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	-0.229	-0.226	9.807	9.812
	(-1.17)	(-1.16)	(1.65)	(1.66)
Partial Recognition	0.165	0.166	8.983*	9.605*
	(0.70)	(0.71)	(2.01)	(2.15)
Full Recognition	0.144	0.142	15.05***	15.15***
	(1.64)	(1.62)	(5.29)	(5.34)
Premigration education (Ref.: Other)				
Training	0.153	0.155	-2.480	-1.915
	(0.66)	(0.68)	(-0.34)	(-0.26)
Apprenticeship	0.236	0.231	-1.165	-0.724
	(1.02)	(1.00)	(-0.16)	(-0.10)
Vocational	0.322	0.302	-1.440	-0.690
	(1.66)	(1.56)	(-0.24)	(-0.12)
University	0.302	0.284	4.257	5.017
	(1.74)	(1.63)	(0.79)	(0.93)
Doctoral	0.600*	0.582*	22.71**	23.21**
	(2.52)	(2.44)	(3.11)	(3.19)
Premigration labor force experience	0.00826	0.00804	-0.291	-0.305
	(0.90)	(0.88)	(-1.08)	(-1.14)
German proficiency	0.0239	0.0239	2.499***	2.538***
	(1.11)	(1.12)	(3.62)	(3.69)
Age at immigration	-0.0108	-0.0104	0.118	0.111
	(-1.19)	(-1.14)	(0.44)	(0.42)
Postmigration labor force experience		0.0378		-1.222
		(1.62)		(-1.72)
Constant	2.363***	2.319***	19.21*	20.27*
	(8.58)	(8.41)	(2.36)	(2.49)
Observations	245	245	300	300

t statistics in parentheses

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

8.3.3 Sensitivity Analyses for Refugees Sample

In this section, I checked whether the estimated effects of the recognition on labor market outcomes were sensitive to the inclusion of additional variables. Therefore, I conducted further analyses on the refugee sample regarding education obtained in Germany. This information was collected in the second wave or later and not in the M6 samples; therefore, the case numbers shrunk considerably. Furthermore, I also controlled for cognitive skills measured by the Symbol-Digit-Test in a further model since math grades were not elicited in the refugee samples. However, the test was only carried out in 2016; therefore, I only focus on M3 and M4 in these analyses.

Table 21 and Table 22 provide several robustness checks of my model specifications by introducing additional variables to the model. All models confirmed the main results. What's more, obtaining a German education enhanced labor market outcomes; however, the effect was not always of the same magnitude as the effect of recognition. For instance, while occupational standing rose by 14 ISEI points when the recognition was successful, it only rose by 7 ISEI points when immigrants pursued German qualifications. In such cases, the qualifications obtained in Germany may be of a lower level than the foreign qualification (i.e., a vocational diploma instead of a university degree). Furthermore, German education has implications for hourly wages as well, however, to a lesser degree.

Finally, Table 23 and Table 24 show results of the robustness check after controlling for cognitive ability. The main result was confirmed regarding labor market activity and occupational standing. However, holding cognitive

Table 21: Recognition and labor force participation (Refugees)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	0.229*	0.190
	(2.02)	(1.67)
Partial Recognition	0.0546	0.0556
	(0.51)	(0.52)
Full Recognition	0.183***	0.178***
	(3.82)	(3.74)
Premigration education (Ref.: Other)		
Training	-0.0698	-0.0851
	(-0.59)	(-0.72)
Apprenticeship	-0.186	-0.189
	(-1.71)	(-1.74)
Vocational	-0.0453	-0.0524
	(-0.47)	(-0.54)
University	-0.0900	-0.0930
	(-1.05)	(-1.09)
Doctoral	-0.0264	-0.0286
	(-0.23)	(-0.25)
Premigration labor force experience	0.0106***	0.0108***
	(3.37)	(3.45)
German proficiency	0.0201	0.0181
	(1.82)	(1.64)
Age at immigration	-0.0189***	-0.0184***
	(-6.14)	(-6.01)
Postmigration labor force experience	0.0612***	0.0605***
	(5.01)	(4.98)
Postmigration education		0.208**
		(2.75)
Constant	0.876***	0.859***
	(7.06)	(6.94)
Observations	704	704

t statistics in parentheses

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

Table 22: Recognition and labor market outcomes (Refugees)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	-0.118	-0.202	8.601	6.957
	(-0.47)	(-0.80)	(1.56)	(1.25)
Partial Recognition	0.262	0.236	1.058	1.039
	(0.86)	(0.78)	(0.16)	(0.16)
Full Recognition	0.230*	0.236*	13.84***	13.71***
	(2.10)	(2.18)	(5.40)	(5.37)
Premigration education (Ref.: Other)				
Training	-0.0147	-0.0689	-2.501	-3.143
	(-0.05)	(-0.24)	(-0.37)	(-0.46)
Apprenticeship	0.179	0.175	-0.963	-1.052
	(0.61)	(0.60)	(-0.15)	(-0.16)
Vocational	0.0806	0.0539	1.148	0.780
	(0.33)	(0.22)	(0.19)	(0.13)
University	0.171	0.169	7.186	7.067
	(0.76)	(0.76)	(1.33)	(1.31)
Doctoral	0.537	0.521	24.41***	24.39***
	(1.77)	(1.73)	(3.55)	(3.57)
Premigration labor force experience	0.00791	0.00960	-0.189	-0.173
	(0.74)	(0.91)	(-0.88)	(-0.81)
German proficiency	0.00866	0.00224	2.295***	2.195***
	(0.32)	(0.08)	(3.62)	(3.47)
Age at immigration	-0.00863	-0.00871	-0.0205	-0.00268
	(-0.83)	(-0.84)	(-0.10)	(-0.01)
Postmigration labor force experience	0.0564*	0.0568*	-0.645	-0.583
	(1.99)	(2.01)	(-0.99)	(-0.89)
Postmigration education		0.334*		6.911*
		(2.28)		(2.01)
Constant	2.295***	2.282***	22.05**	21.16**
	(6.89)	(6.90)	(3.06)	(2.95)
Observations	281	281	371	371

t statistics in parentheses

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

Table 23: Recognition and labor force participation (Refugees)

	Model 1	Model 2
Recognition (Ref.: never tried)		
Denied Recognition	0.415**	0.360**
	(2.62)	(2.74)
Partial Recognition	0.145	0.202*
	(0.96)	(2.00)
Full Recognition	0.185**	0.218***
	(2.87)	(3.60)
Premigration education (Ref.: Other)		
Training	0.123	0.114
	(0.69)	(0.78)
Apprenticeship	-0.0213	-0.0214
	(-0.13)	(-0.16)
Vocational	0.167	0.185
	(1.08)	(1.49)
University	0.0987	0.120
	(0.71)	(1.07)
Doctoral	0.0422	0.0311
	(0.25)	(0.22)
Premigration labor force experience	0.0136**	0.0113**
	(2.85)	(2.93)
German proficiency	0.0255	0.0223
	(1.48)	(1.54)
Age at immigration	-0.0185***	-0.0152***
	(-4.01)	(-3.94)
Postmigration labor force experience	0.0653***	0.0812***
	(3.95)	(5.35)
Cognitive skills		-0.00692
		(-0.26)
Constant	0.640***	0.475**
	(3.32)	(3.04)
Observations	378	496

t statistics in parentheses

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

Table 24: Recognition and labor market outcomes (Refugees)

	Log Wages (1)	Log Wages (2)	ISEI (1)	ISEI (2)
Recognition (Ref.: never tried)				
Denied Recognition	-0.352	-0.443	8.370	9.273
	(-1.39)	(-1.78)	(1.09)	(1.30)
Partial Recognition	0.214	0.192	-3.554	1.321
	(0.70)	(0.64)	(-0.46)	(0.22)
Full Recognition	0.265*	0.182	12.91***	12.08***
	(2.24)	(1.54)	(3.76)	(3.51)
Premigration education (Ref.: Other)				
Training	-0.433	-0.412	6.448	6.190
	(-1.07)	(-1.05)	(0.57)	(0.55)
Apprenticeship	-0.0904	-0.0931	7.903	6.949
	(-0.22)	(-0.23)	(0.71)	(0.63)
Vocational	-0.164	-0.250	7.054	4.975
	(-0.44)	(-0.69)	(0.66)	(0.48)
University	-0.197	-0.256	16.18	14.37
	(-0.56)	(-0.74)	(1.60)	(1.43)
Doctoral	-0.00476	0.00276	30.65**	29.70*
	(-0.01)	(0.01)	(2.63)	(2.56)
Premigration labor force experience	0.00849	0.00796	-0.179	-0.114
	(0.74)	(0.72)	(-0.57)	(-0.38)
German proficiency	0.0237	0.000660	1.601	0.968
	(0.72)	(0.02)	(1.89)	(1.15)
Age at immigration	-0.00442	-0.000529	0.0222	0.0781
	(-0.39)	(-0.05)	(0.07)	(0.27)
Postmigration labor force experience	0.0622*	0.0548	-1.635	-1.849*
	(2.10)	(1.90)	(-1.87)	(-2.17)
Cognitive skills		0.186**		3.219
		(3.06)		(1.93)
Constant	2.465***	2.493***	16.39	17.81
	(5.57)	(5.79)	(1.32)	(1.46)
Observations	159	159	210	231

t statistics in parentheses

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

ability constant, the recognition effect lost its magnitude and became statistically insignificant on a conventional level when looking at hourly wages. It is possible that cognitive ability rather than full recognition is driving the income increase. However, this was not the case for occupational standing. Here the effect of full recognition remained stable, even after controlling for cognitive ability.

8.4 Discussion

The third question of my doctoral project was whether official recognition improves labor market outcomes in general. The results provide a comprehensive overview of recognition effects. While other studies focus on a specific group or sample, this work provides the full picture by looking at the recognition effects for different groups and over time. In most cases, full recognition has a positive effect, at least on qualitative labor market outcomes regarding wages or occupational status. These findings broadly support those of other studies (Brücker, Glitz, et al. 2021; Kogan 2012; Tibajev and Hellgren 2019). However, official recognition does not contribute to a higher employment rate. While Brücker et al. (2021) finds a recognition effect on labor market participation, my analyses cannot confirm this effect. Nevertheless, the findings are consistent with what is to be expected. When foreign qualifications are not recognized, immigrants are likely to pursue another strategy; instead of withdrawing from the labor market, they accept lower-qualified jobs. Those who achieve full recognition seem to profit from better job opportunities regarding wages and occupational standing.

Recognition works for different migrant groups differently. While full recognition does not have an effect on labor market integration for most immigrants, it has an effect on refugees. It is difficult to explain this result. The inconsistency may be due to limited data, as information on education acquired in Germany is missing compared to in other samples. Another explanation is that German employers are less familiar with overseas education systems and only hire refugees with recognized qualifications. Furthermore, the analyses uncovered a surprising result for those who tried to get their qualifications recognized but did not succeed, indicating that unsuccessful recognition had a positive effect on labor market participation compared to never trying to attain recognition. It is possible that the group of people who try and fail to gain recognition is also the most motivated group.

Qualitative labor market outcomes regarding wages or occupational status also differ between the various samples. Full recognition positively affects wages and occupational status in most samples. However, in the new EU immigrant samples, only partial recognition has a positive effect and only for occupational status. Furthermore, the yields of full recognition I found were higher in the old immigrant sample than those found by another study (Brücker, Glitz, et al. 2021). For other samples, there were no other comparable studies; therefore, these results are considered novel. However, at this point, it is necessary to point out that the differences in recognition effects are not only caused by the various migration groups but also by the fact that for some groups (e.g., M1) the outcomes we observe are mostly long-term recognition outcomes while for other groups (e.g., M7 and M8) only short-term outcomes can be observed.

The major limitation of this study is the data limitation, which made it impossible to make causal inferences. However, it is reasonable to assume that there is a causal connection. Moreover, it has to be stressed that these results do not provide evidence for the mechanism behind them. Because the information, whether the immigrants' occupations are regulated or not, is missing, it remains unclear whether these results are driven by signalling (providing more information) or by occupational closure (i.e., legal access to the occupation).

9 Conclusion

In the last ten years, over 4 million people have relocated to Germany. As a result, the country is increasingly concerned about its ability to integrate these individuals into the German labor market. At the same time, Germany is facing an extreme shortage of skilled labor, which poses a serious threat to the country's economic development. In response to these circumstances, and recognizing the challenges posed by Germany's strong credentialist culture in integrating foreign qualifications, Germany introduced the Recognition Act in 2012. This act allows all individuals with foreign qualifications, regardless of their immigration status or occupation, to have their qualifications recognized. The primary aim of this thesis was to evaluate whether recognizing foreign educational qualifications helps immigrants achieve better outcomes in the labor market. The impact is noticeable for regulated professions, as professional accreditation is granted upon a positive outcome (full recognition). However, the effect is less clear in nonregulated professions, which can be practiced without recognition. We could expect recognition to reduce employers' uncertainties regarding foreign qualifications and thus improve the chances in the recruitment process, by assessing the equivalence between the foreign qualification and German standards and providing valuable information about foreign qualifications. However, is this the case? Given Germany's deep-rooted credentialism, which values formal, domestic qualifications, the recognition process for foreign credentials presents a particularly complex challenge. To unravel the complicated web of factors that affect labor market integration of immigrants with recognized foreign educational

qualifications, I used a mixed-method approach, analyzing the research question with both experimental and observational data enriched with qualitative interviews. In the following, I provide an overview of the main findings from this research. The previous research on this topic, which primarily relied on survey data, failed to distinguish between regulated and nonregulated professions. As a result, it couldn't provide conclusive evidence. The only attempt to examine the effect of recognition in nonregulated professions was based on data from a hypothetical recruitment situation (Damelang, Ebensperger, and Stumpf 2020). However, there are valid reasons to believe that hiring intentions, which are measured in a hypothetical situation, differ substantially from real-world hiring decisions. Thus, field experiments not only provide conclusive evidence about the causal relationship between recognition of foreign educational qualifications and labor market chances in the hiring situation; they also offer a much-needed reality check. The results of the present study are in stark contrast to those of most previous studies on this topic, as they show that a certificate of equivalence worsens immigrants' chances in the hiring process. Perhaps most strikingly, the results show that when candidates even slightly indicate being in the recognition process in the motivation letter—even if they do not provide the recognition letter or know the outcome—this diminishes their chances of getting a positive response from the employer. Apparently, recognition successfully sends a signal, however, the signal is perceived differently than expected by theoretical assumptions. It is possible that the recognition of educational credentials does not diminish the uncertainties employers face when hiring foreign-educated candidates but rather has an unexpected implication, namely the need to pay the person

as professional, which lowers the incentives to hire a candidate with recognized foreign qualifications. This counter-intuitive finding suggests that the very act of formal recognition, within a highly credentialist system, might inadvertently trigger negative perceptions or financial concerns in employers, rather than simply validating the qualification. Although field experiments are well suited to identifying a causal relationship between the recognition of educational credentials and immigrants' chances of receiving a positive callback, they are less suited to revealing the mechanism behind the causal relationship. To deepen my understanding of why employers prefer candidates without recognition, which is, at first glance, counterintuitive, I carried out a survey experiment. Applying a choice experiment, I tested whether this might be the case because of the employers' anticipation of higher labor costs for hiring a candidate with recognition. The results contradicted the field experiment, showing that only recognition matters, while wages are irrelevant for employers. Although I did not manage to identify the cause of the differences in results between the field and survey experiments, the comparison highlights the issue of method choice. The obvious proposition is that hiring intentions, which are measured in the survey experiment, do not necessarily correspond to hiring behavior in the field experiment. In section 9, I discuss the possible explanations. The most convincing one is that employers theoretically put a higher value on recognition; however, when it comes to actual hiring, action deviates from intention. Employers were also given the opportunity to express their opinion on recognition directly in an open question after the survey experiment had been completed. The results turned out to be mixed as well. Many employers argued that hiring a candidate

without recognition may be a welcomed cost-saving strategy for employers. Another important argument emerged from the interviews as well: employers reported prejudices against foreign skills, even for candidates with recognition. It seems likely, therefore, that recognition does not diminish employers' uncertainties as was anticipated by officials, at least not in nonregulated professions. This reinforces the idea that despite official recognition, the deeply ingrained credentialist mindset, combined with potential biases, can lead to unintended behavior in practice. Namely, avoiding the hiring of credentialed foreign workers over concerns about higher labor costs, especially in the presence of ongoing uncertainties. In the last step, I analyzed whether foreign qualification recognition improved immigrants' labor outcomes in the short, medium, and long run with survey data. Unfortunately, I could not distinguish between regulated and nonregulated professions; therefore, the effect of recognition that results from this were less related to signalling mechanisms than to occupational closure. These results confirm the common empirical evidence on recognition, namely it improves labor market participation, wages, and socio-economic status. However, the effects vary depending on the sample. In general, recognition does not necessarily contribute to better labor market participation or higher wages, but it almost always leads to higher socio-economic occupational status. These results indicate that immigrants with unrecognized qualifications develop a strategy for labor market participation or higher wages. However, they do not achieve the same socio-economic occupational status as those with recognized qualifications. The implications of these results will need to be discovered. If we put the results of the two experiments with the insights derived from open

question and survey data together, the complexity of the matter becomes evident. First, the recognition of foreign qualifications has implications for the wage structure that may affect hiring behavior. Employers highlight the need for skilled workers in the industry; however, they may still be reluctant to hire a candidate with recognition, particularly when employers hold negative beliefs about foreign skills. When German employers' expectations of higher labor costs are combined with their still existing uncertainties regarding foreign qualifications, they may have lower incentives to hire this candidate. Employing a candidate without a certificate of equivalence is a cost-saving strategy. Thus, providing a certificate of recognition in the hiring situation could be a disadvantage for immigrants. This dynamic illustrates how Germany's credentialist emphasis on formal qualifications, when applied to foreign credentials, can lead to unintended negative consequences in the hiring process. Consequently, I could not conclusively answer whether foreign qualification recognition is "useful" as this facilitates skills assessment by employers. However, there is considerable evidence that recognition has a positive effect, although not as anticipated by policymakers. The current findings based on observational data indicate that recognition of foreign qualifications has a positive effect on socio-economic occupational status. These findings have significant implications for understanding how the certificate of equivalence works. The decision to "send" the certificate of equivalence with the rest of the application document may depend on the immigrant's goal. If an immigrant is looking for any job rather than a "good" job, providing the recognition letter might be counterproductive. However, providing a recognition letter, although it involves more time in regard to applications, may lead

to a better job outcome. Moreover, a recognition letter can help a candidate already in employment to move up the career ladder. Apart from the practical implications, the findings contribute to the current literature, as they challenge the common assumption that the recognition of foreign qualifications generally decreases employers' uncertainties. Moreover, they make the complexity of the effects of recognition visible. For instance, the recognition has an impact on other factors like wage structure, which in turn may have an effect on employers' hiring and promoting behaviors. Ultimately, my research reveals that while the Recognition Act aimed to dismantle barriers rooted in credentialism, the ingrained nature of this cultural emphasis means the effects of recognition are far more intricate and sometimes counterproductive than initially envisioned by policy.

9.1 On Hiring Intention and Decision

The two experiments conclude that the certificate of equivalence does not work as policymakers anticipated. As we have seen, the survey results deviated strongly from those of the field experiment. At least in the hiring situation, it imposes more uncertainty. To assess possible bias that may have resulted from selective participation, I conducted a comparison test. The two groups of participants were very similar in terms of the industry, location, and Firm Size. However, the discrepancy between these survey responses and the actual behavior was so striking that it raises the question of why hiring intentions and actual behavior differ so greatly. The present study design allowed me to directly compare employers' hiring intentions

regarding candidates with recognized qualifications and their actual hiring behavior. In seeking to uncover the mechanism of recognition, this analysis may have unintentionally revealed something about the nature of surveys. The present chapter seeks to make headway in this discussion, following up on the insights provided by LaPiere (1934) and Pages et al. (2005). Of course, there are limitations to survey experiments. There is the ubiquitous problem of selection bias. Specifically, the initial priming in the mail subject might have meant that the participating employers were more interested or dependent on securing skilled labor. Therefore, their responses might have been different than those of companies where the shortage of skilled workers is less pronounced. The most relevant explanation for the discrepancy between hiring intention and hiring behaviors might be that the "recognition" may not elicit the same intensity of response as it does in an actual situation. Note that the recognition letter also provides further information on the skill acquired abroad than would be implied by a mere statement that a person possesses a recognized qualification. Employers in the field experiment might have concluded that the foreign qualification was not equivalent to German education during the review of the application documents. They could not do so in the survey experiment—employers could not go into such depth and had to rely completely on the fact that the candidate had received a statement of equivalence or not. However, the candidate who only mentioned being in the recognition process also received a less positive response in the field experiment. Even if the employer is unaware of the recognition attempt's outcome, the mere act of seeking recognition triggers a different response. Another possible explanation, and in my view the most important

one, relates to differences in the criteria used when assessing a hypothetical versus an actual job applicant or relating to hypothetical or actual job vacancies. Some studies have reported a discrepancy between survey and field experiments. For instance, Pager and Quillian (2005) has found that in surveys, self-reported hiring intention deviate from respondents decisions in actual hiring situations. Moreover, Mergener and Maier (2019) provided evidence that only actual labor shortages impacted the hiring of candidates with foreign qualifications in vignette studies; hypothetical labor shortages did not have the same effect. Consequently, although the employers really think that they would hire a candidate in a described hypothetical situation, their assessment criteria might change in a real life situation. In the same vein, and last but not least, there is something that Treischl and Wolbring (2022) calls the "cost of action." In the choice experiment, this particularly applies to wages, which literally represent costs for companies. The fact that wages do not really matter in the choice experiment indicates a possible deviation in assessment criteria between hypothetical and real situations. After all, no employer could credibly claim that the salary level plays no role at all. Thus, it seems likely that the costs—i.e., wages—are only relevant in real hiring situations.

9.2 Limitations & Prospects

The research presented here has revealed puzzling and contradictory evidence, making the findings susceptible to significant criticism. To begin with, some considerations regarding the field experiment are warranted. First of

all, as is the case with all field experiments, the external validity is limited. I focus on craft industry occupations, where work experience is valued more than certificates. Recognition might be more worthwhile in other occupations or educational levels (i.e., academic degrees) than in the craft industry. Moreover, I focus on only "one" country of origin. Qualifications from other countries might be perceived differently by employers. Moreover, similar issues apply to survey experiments. The "hypothetical bias" in the choice experiment raises the possibility of low external validity. While hypothetical bias is expected to be less pronounced in survey experiments measuring respondents' attitudes, it might be higher when measuring behavioral intentions. As Treischl and Wolbring (2022) elaborated, intentions may fail to translate into actual behavior due to the high costs of the action. This might mainly be the case in a hiring decision, where unsuitability for the job, in combination with high German employment protections, poses high costs. Furthermore, there is a high chance of self-selection in the survey experiment, which might lead to a bias in the results. Although many companies were contacted, only a few participated, and those who did are likely the most motivated regarding recruiting skilled labor. Finally, the observational data used here cannot be used to infer the signalling effect of recognition when information on whether the foreign profession belongs to a regulated occupation in Germany is missing. Moreover, no causal evidence can be drawn as no information on earnings and socio-economic position in the first job is available (see more detail in the conclusion of the survey data section).

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Appendices

A Field Experiment

A.1 Technical Report

A.1.1 Cover Story

For reasons of comparability with the ADIS study, the cover story of the fictitious applicant is almost identical to the cover story from the ADIS study. However, since we test foreign qualifications, the cover story deviates from the ADIS study at some points. For instance, it only concentrates on the male profile. This is primarily due to practical reasons, as the plant mechanics occupation is very male-dominated. The candidate was born on February 23rd, 1992, in Sarajevo, unlike in the original ADIS study in Germany. This should highlighting the signal value of the country of origin. Moreover, he completed his primary school education in Mannheim which ensures a more credible application profile regarding his knowledge of the German language. He then transferred to a primary school in Sarajevo, which takes nine grades in Bosnia and Herzegovina. He then completed vocational training at the middle school in Sarajevo. After completing the vocational training, the Bosnian fictitious company GRIC employed the applicants. To avoid the scarring effects of unemployment by signalling to be unemployed at the time of the application process, the CV stated that he were still in this employment (Birkelund, Heggebø, and Rogstad 2017). Although providing a reference is

common in Germany, no reference letter was sent. On the one hand, this is not common practice in Bosnia and Herzegovina; on the other hand, since the candidate is still employed, it is unrealistic for him to have a reference letter from the current employer.

Since sending application photos in Germany is customary, the experiment relies on the work done by the ADIS study[45]. It used the same application photo, Southern European, for the male applicant [46]. It applies the same procedure to the name. It uses the same name, Ajdin Kovačević, as the ADIS study. This should also signal the ethnic background. Moreover, the skills section of the CV explicitly listed knowledge of Bosnian, Serbian, and Croatian languages besides German and English skills. However, unlike the ADIS study, it intentionally refrained from differentiating between the language levels to avoid stressing the German language level.

A.1.2 Cognitive Pretest

Before setting up the experiment, I conducted face-to-face interviews with potential employers in the sanitary sector to get insight into their companies' hiring processes. Make-up fictitious application documents were presented to the employers to check whether the application documents seemed credible to them. The biggest challenge was to find employers as interview partners for the cognitive pretest. Although over 100 employers in the sanitary industry in and around Mannheim were contacted by mail and telephone, only one employer was willing to speak with us. There are many possible reasons for

[45] see Textbox 2: Survey on attractiveness and competence in (Veit and Yemane 2018)
[46] see Figure 2: Photo series in (Veit and Yemane 2018)

employers' reluctance. One reason is time. An interview is time-consuming, particularly considering the sanitary sector is very busy due to labor shortages. Another possible explanation is character of industry itself. Since the businesses are run by craftsmen who never come in contact with academic work and research, they are more reluctant than employers in other industries to invest their time in interviews, as the answer of the interview partner illustrates. After the interview, he was asked to establish contacts with other companies. He answered: "Nobody has the time or wants to deal with things that interfere with everyday life and do not "achieve" anything. Companies are certainly not interested in politically orientated processes or integration issues." [...es hat niemand mehr Zeit bzw., es will sich keiner mehr mit Dinge befassen, die "störend" in den Alltag eingreifen und nichts "bringen". Schon gar nicht haben die Unternehmen Lust auf politisch orientierte Vorgänge oder aber Integrationsangelegenheiten...]. In the end further interview partners, in total four, were found through personal contacts.

All interviews were semi-structured. Because of the problems finding an interview partner, only one interview was recorded. Although the focus was on application documents, the interviews started with general questions (number of employees, recruitment practice, etc.) in order to help establishing a positive interview setting. The interviews focused on whether the application documents, particularly the Bosnian school diploma and the certificate of recognition, were credible.

The application material had to be generated before the cognitive pretest. Besides the motivation letter and the CV, the application materials include

copies of all relevant certificates (see Appendix X). The Bosnian middle school diploma[47] was provided in German. The biggest challenge was creating a credible certificate of recognition since the recognition is based on very individual factors (skills, labor force experience, etc.). For this purpose, I had several interviews with experts on recognition from the Chamber of Crafts (Mannheim, Berlin, Ludwigshafen).

A.1.3 Pilotstudy

In the next step, I conducted a pilot study. In April 2018, I first sent 29 and between 13.05.2018 and 19.05.2019 further 57 applications all across Germany to test the software [48], the application documents and design. After receiving some queries from the employers regarding the possibility of moving to the place of work, I added more information on this issue to the application documents. More precisely, the following statement, "Of course, I am happy to relocate for this interesting job." [Natürlich bin ich gern bereit, für diese interessante Tätigkeit, meinen Wohnort zu verlagern], was added to the motivation letter, which should stress the motivation to relocate for the job. No further design issues showed up during the pilot study.

A.1.4 Carrying out the field experiment

The fictitious application provided contact details in the CVs, including an email address, a mobile phone number, and a postal address. For this pur-

[47] which is also a certificate of occupation

[48] The fieldwork section provides more details on the software and the exact procedure.

pose, I generated an email address for the fictitious applicant and bought a new mobile number. The postal address in Mannheim was a return address. When employers called the mobile phone number, the provider automatically answered an automatic voicemail. No specific requests were answered, such as questions about the desired salary mentioned in job ads. Most employers first tried to get in contact via phone, leading to a missed call, followed by leaving a message on the voicemail and then by email. In most cases, the number from where the employer called was visible and could be traced back to the employer. However, for eight telephone calls received, the employers could not be identified. Moreover, in 6 cases, the delivery failed due to the wrong email address, and in 8 cases, the position failed. In the latter, the reasons were either the position was not vacant (3x), the vacancy was initially for vocational training (1x), a second application to the company (3x)[49] or the company requested further action regarding data protection (1x).

[49] I withdrew the applications as soon as the mistake was discovered

A.1.5 Application materials

Figure A.6: Example cover letter (without recognition letter)

Ajdin Kovačević,
[redacted]
68169 Mannheim

[redacted]

Mannheim, 20.09.2019

Bewerbung um eine Stelle als Anlagenmechaniker (SHK)

Sehr geehrter Herr [redacted],

mit großem Interesse habe ich Ihre Stellenausschreibung auf der Internetseite der Bundesagentur für Arbeit gelesen und möchte mich bei Ihnen bewerben. Ich bin ausgebildeter Gas- und Wasserinstallateur mit Berufserfahrung. Meine bosnische Ausbildung entspricht der deutschen Ausbildung zum Anlagenmechaniker für Sanitär-, Heizungs- und Klimatechnik.

Seit dem Abschluss meiner Ausbildung im Mai 2011 arbeitete ich als festangestellter Anlagenmechaniker in meinem Ausbildungsbetrieb. Nun möchte ich meine Kenntnisse und Fertigkeiten erweitern und suche deshalb die berufliche Veränderung. Natürlich bin ich gern bereit, für diese interessante Tätigkeit, meinen Wohnort zu verlagern.

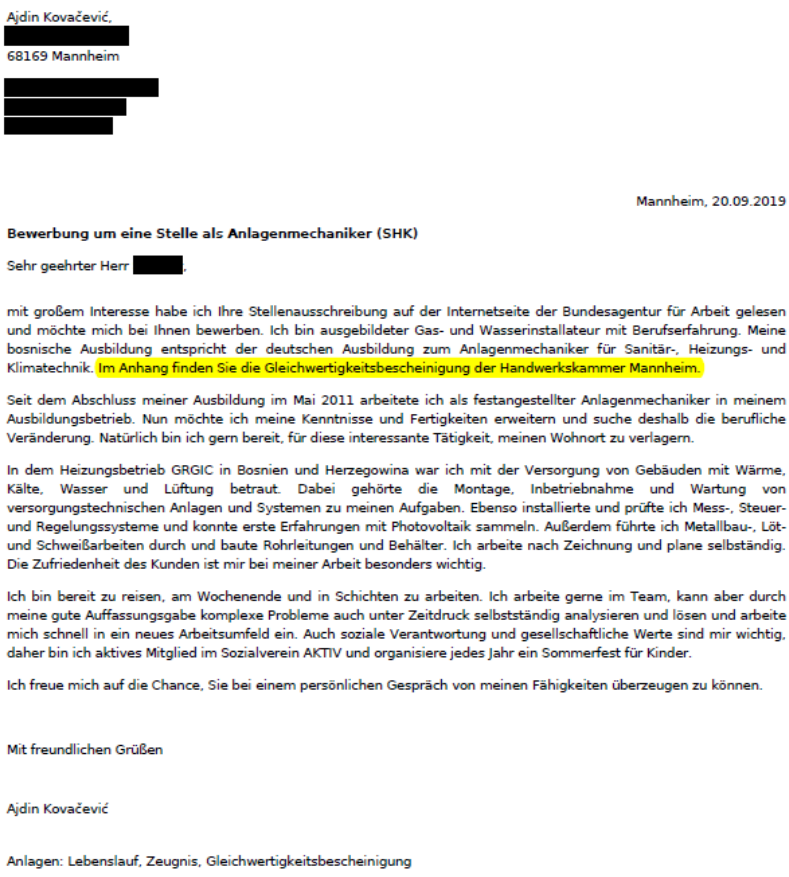
In dem Heizungsbetrieb GRGIC in Bosnien und Herzegowina war ich mit der Versorgung von Gebäuden mit Wärme, Kälte, Wasser und Lüftung betraut. Dabei gehörte die Montage, Inbetriebnahme und Wartung von versorgungstechnischen Anlagen und Systemen zu meinen Aufgaben. Ebenso installierte und prüfte ich Mess-, Steuer- und Regelungssysteme und konnte erste Erfahrungen mit Photovoltaik sammeln. Außerdem führte ich Metallbau-, Löt- und Schweißarbeiten durch und baute Rohrleitungen und Behälter. Ich arbeite nach Zeichnung und plane selbständig. Die Zufriedenheit des Kunden ist mir bei meiner Arbeit besonders wichtig.

Ich bin bereit zu reisen, am Wochenende und in Schichten zu arbeiten. Ich arbeite gerne im Team, kann aber durch meine gute Auffassungsgabe komplexe Probleme auch unter Zeitdruck selbstständig analysieren und lösen und arbeite mich schnell in ein neues Arbeitsumfeld ein. Auch soziale Verantwortung und gesellschaftliche Werte sind mir wichtig, daher bin ich aktives Mitglied im Sozialverein AKTIV und organisiere jedes Jahr ein Sommerfest für Kinder.

Ich freue mich auf die Chance, Sie bei einem persönlichen Gespräch von meinen Fähigkeiten überzeugen zu können.

Mit freundlichen Grüßen

Figure A.7: Example cover letter (with recognition letter)



Ajdin Kovačević,
[redacted]
68169 Mannheim
[redacted]

Mannheim, 20.09.2019

Bewerbung um eine Stelle als Anlagenmechaniker (SHK)

Sehr geehrter Herr [redacted],

mit großem Interesse habe ich Ihre Stellenausschreibung auf der Internetseite der Bundesagentur für Arbeit gelesen und möchte mich bei Ihnen bewerben. Ich bin ausgebildeter Gas- und Wasserinstallateur mit Berufserfahrung. Meine bosnische Ausbildung entspricht der deutschen Ausbildung zum Anlagenmechaniker für Sanitär-, Heizungs- und Klimatechnik. Im Anhang finden Sie die Gleichwertigkeitsbescheinigung der Handwerkskammer Mannheim.

Seit dem Abschluss meiner Ausbildung im Mai 2011 arbeitete ich als festangestellter Anlagenmechaniker in meinem Ausbildungsbetrieb. Nun möchte ich meine Kenntnisse und Fertigkeiten erweitern und suche deshalb die berufliche Veränderung. Natürlich bin ich gern bereit, für diese interessante Tätigkeit, meinen Wohnort zu verlagern.

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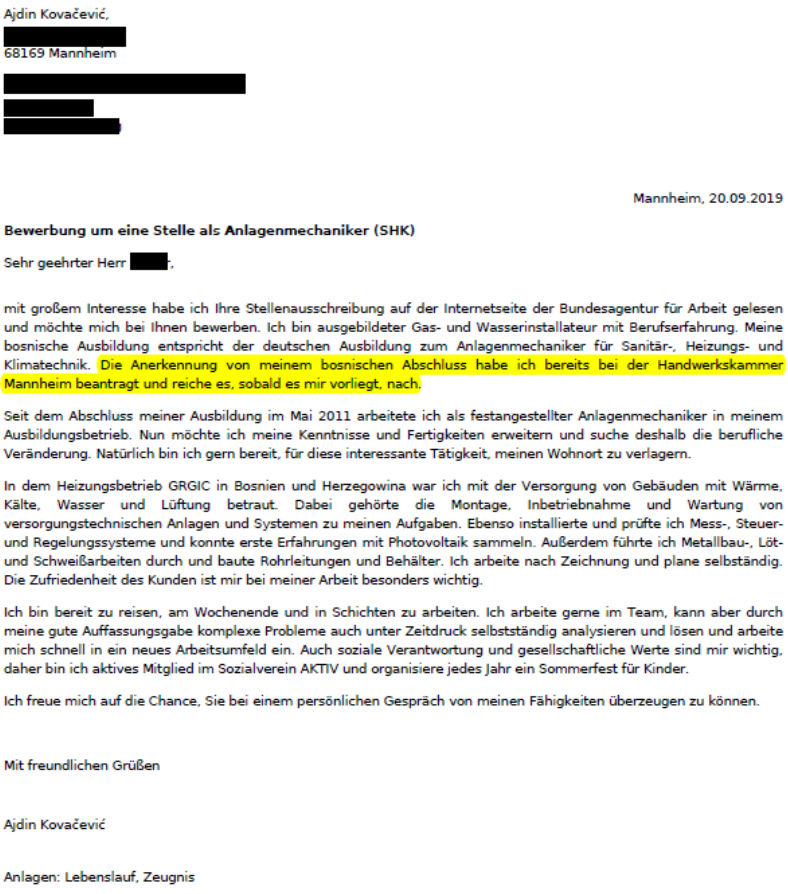
Mit freundlichen Grüßen

Ajdin Kovačević

Anlagen: Lebenslauf, Zeugnis, Gleichwertigkeitsbescheinigung

Figure A.8: Example cover letter (with statement of recognition process)



Ajdin Kovačević,
[redacted]
68169 Mannheim
[redacted]

Mannheim, 20.09.2019

Bewerbung um eine Stelle als Anlagenmechaniker (SHK)

Sehr geehrter Herr [redacted],

mit großem Interesse habe ich Ihre Stellenausschreibung auf der Internetseite der Bundesagentur für Arbeit gelesen und möchte mich bei Ihnen bewerben. Ich bin ausgebildeter Gas- und Wasserinstallateur mit Berufserfahrung. Meine bosnische Ausbildung entspricht der deutschen Ausbildung zum Anlagenmechaniker für Sanitär-, Heizungs- und Klimatechnik. Die Anerkennung von meinem bosnischen Abschluss habe ich bereits bei der Handwerkskammer Mannheim beantragt und reiche es, sobald es mir vorliegt, nach.

Seit dem Abschluss meiner Ausbildung im Mai 2011 arbeitete ich als festangestellter Anlagenmechaniker in meinem Ausbildungsbetrieb. Nun möchte ich meine Kenntnisse und Fertigkeiten erweitern und suche deshalb die berufliche Veränderung. Natürlich bin ich gern bereit, für diese interessante Tätigkeit, meinen Wohnort zu verlagern.

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Ich freue mich auf die Chance, Sie bei einem persönlichen Gespräch von meinen Fähigkeiten überzeugen zu können.

Mit freundlichen Grüßen

Ajdin Kovačević

Anlagen: Lebenslauf, Zeugnis

Figure A.9: Example CV

LEBENSLAUF

PERSÖNLICHE DATEN

Name	Ajdin Kovačević
Anschrift	[redacted] 68169 Mannheim
Telefon	0171-2876439
E-Mail	kovacevic.ajdi@gmail.com
Geburtsdatum	23.02.1992 in Sarajevo
Nationalität	Bosnisch
Familienstand	Ledig

SCHULE UND AUSBILDUNG

09/98 – 07/02	Grundschule in Mannheim
08/02 – 06/08	Grundschule in Sarajevo (9 Klassen) Abschlussnote: gut
09/08 – 05/11	Ausbildung zum Gas- und Wasserinstallateur an der Öffentlichen Anstalt Gemischte Mittelschule, Sarajevo Abschlussnote: sehr gut

BERUFSTÄTIGKEIT

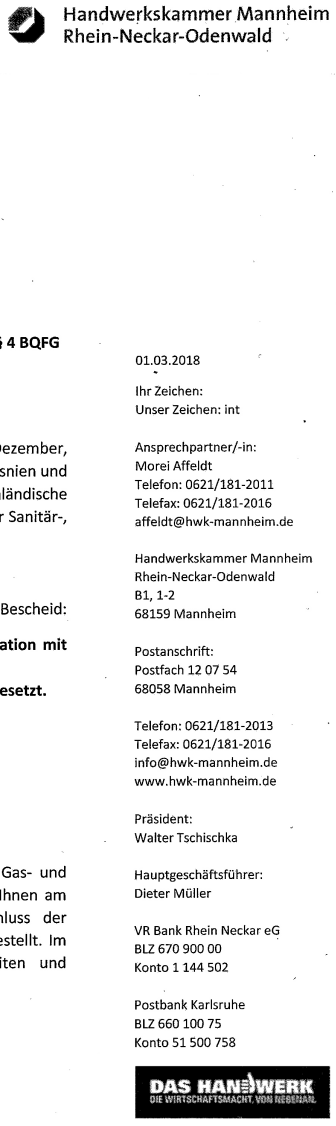
06/11 – 08/19	Heizungsbetrieb GRGIC in Bosnien und Herzegowina

BESONDERE KENNTNISSE UND INTERESSEN

Sprachkenntnisse	Bosnisch, Deutsch, Englisch, Kroatisch, Serbisch
EDV	sicherer Umgang mit Microsoft Office, Internet-Recherche
Ehrenamt	Mitglied im Sozialverein AKTIV
Sonstiges	Führerschein Klasse B

Mannheim, 20.09.2019

Figure A.10: Recognition letter (Page 1)



Handwerkskammer Mannheim
Rhein-Neckar-Odenwald

Handwerkskammer Mannheim Rhein-Neckar-Odenwald
Postfach 12 07 54, 68058 Mannheim

Ajdin Kovačević
[redacted]
68169 Mannheim

Bescheid über Gleichwertigkeitsfeststellung nach § 40 a HwO /§ 4 BQFG

01.03.2018

Ihr Zeichen:
Unser Zeichen: int

Sehr geehrter Herr Ajdin Kovačević,

Sie haben am 02. Dezember 2017, bei uns eingegangen am 09. Dezember, einen Antrag auf die Feststellung der Gleichwertigkeit Ihrer in Bosnien und Herzegowina erworbenen Berufsqualifikationen gestellt. Als inländische Referenzqualifikation wurde der Beruf Anlagenmechaniker/in für Sanitär-, Heizungs- und Klimatechnik zugrunde gelegt.

Auf Ihren Antrag ergeht aufgrund § 40 HwO / § 4 BQFG folgender Bescheid:

1. **Es besteht eine volle Gleichwertigkeit Ihrer Berufsqualifikation mit der inländischen Berufsqualifikation.**
2. **Für diese Entscheidung wird eine Gebühr von 300 EUR festgesetzt.**

Begründung:

1. Darstellung des Sachverhalts

Sie haben in Bosnien und Herzegowina eine Ausbildung zum Gas- und Wasserinstallateur von 2008 bis 2011 absolviert. Dazu wurde Ihnen am 05.05.2011 ein „Abschlusszeugnis: Diplom über den Abschluss der Mittelschule, Öffentliche Anstalt Gemischte Mittelschule“ ausgestellt. Im Rahmen Ihrer Ausbildung haben Sie Kenntnisse, Fertigkeiten und Fähigkeiten in folgenden Bereichen für den Beruf erworben:

Ansprechpartner/-in:
Morei Affeldt
Telefon: 0621/181-2011
Telefax: 0621/181-2016
affeldt@hwk-mannheim.de

Handwerkskammer Mannheim
Rhein-Neckar-Odenwald
B1, 1-2
68159 Mannheim

Postanschrift:
Postfach 12 07 54
68058 Mannheim

Telefon: 0621/181-2013
Telefax: 0621/181-2016
info@hwk-mannheim.de
www.hwk-mannheim.de

Präsident:
Walter Tschischka

Hauptgeschäftsführer:
Dieter Müller

VR Bank Rhein Neckar eG
BLZ 670 900 00
Konto 1 144 502

Postbank Karlsruhe
BLZ 660 100 75
Konto 51 500 758

Figure A.11: Recognition letter (Page 2)

1. Klasse
- Maschinenbaumaterialien (3 U-Std./Woche)
- Technisches Zeichnen (4 U-Std./Woche)
- Technische Mechanik (3. U-Std./Woche)
- Praktischer Unterricht (7 U-Std./Woche): Grundlagen der Metallbearbeitung

2. Klasse
- Wirtschaft und Betriebsorganisation (2 U-Std.)
- Bearbeitungstechnologie (2 U-Std.)
- Maschinenelement (2 U-Std./ Woche)
- Technologie des Berufs (2 U-Std./Woche)
- Praktischer Unterricht (14 U-Std./Woche): spanende und spanlose Metallbearbeitung: Bohren, Biegen, Löten, Gas- und Lichtbogenschweißen

3. Klasse
- Technologie des Berufs (2 U-Std./Woche)
- Betriebs- und Arbeitsmaschinen (2 U-Std./Woche)
- Praktischer Unterricht (20 U-Std./Woche): Gasinstallationen, Installation von Sanitäranlagen, Wasserver- und entsorgung

Laut den vorgelegten Unterlagen betrug die Ausbildungszeit drei Jahre.

Darüber hinaus verfügen Sie über mehrjährige einschlägige Berufserfahrung, die durch den Arbeitsvertrag nachgewiesen werden konnte:

- 06/2011 bis 10/2017 Heizungsbetrieb GRGIC in Bosnien und Herzegowina

2. Rechtliche Würdigung

a. Die Gleichwertigkeitsprüfung hat ergeben, dass zwischen Ihrer Berufsqualifikation und der deutschen Referenzqualifikation Anlagenmechaniker/in für Sanitär-, Heizungs- und Klimatechnik wesentliche Unterschiede bestehen.

b. Die wesentlichen Unterschiede ergeben sich in der
   i. Installation von Bade- und Wasseranlagen unter Beachtung der geltender Normen
   ii. Dauer der Ausbildung. Ihre ausländische Ausbildung dauerte insgesamt drei Jahre. Die Ausbildungsdauer in dem deutschen Referenzberuf beträgt 3,5 Jahre.
   iii. geringeren Dauer des praktischen Anteils Ihrer Ausbildung im Vergleich zu dem Praxisanteil von zwei Dritteln der Regelausbildungsdauer für den Berufsabschluss zum deutschen Referenzberuf.

Um sicherzustellen, dass die wesentlichen Unterschiede in Ihrer Ausbildung durch nachgewiesene einschlägige Berufserfahrung ausgeglichen werden können, wurde hierzu mit Ihnen am 15. Februar 2018 eine Anhörung in Form eines Fachgesprächs mit einem von uns beauftragten Experten in Sanitär-, Heizungs- und Klimatechnik durchgeführt. Hierbei ist der Experte zu dem Ergebnis gekommen, dass durch die materielle Prüfung als defizitär ausgewiesene Kenntnisse durch die von Ihnen nachgewiesene einschlägige Berufserfahrung gegeben sind.

Figure A.12: Recognition letter (Page 3)

c. Aus diesem Grund wird eine vollständige Gleichwertigkeit Ihrer Berufsqualifikation mit einer in der Bundesrepublik Deutschland absolvierten Ausbildung zum/zur Anlagenmechaniker/in für Sanität-, Heizungs- und Klimatechnik festgestellt.

3. Gebühren:

Für die Genehmigung wird gemäß Handwerkskammer eine Gebühr in Höhe von insgesamt 300 EUR festgesetzt. Die Gebühr wurde von Ihnen bereits beglichen. Wir bestätigen hiermit den Eingang Ihrer Zahlung.

4. Rechtsbelehrung:

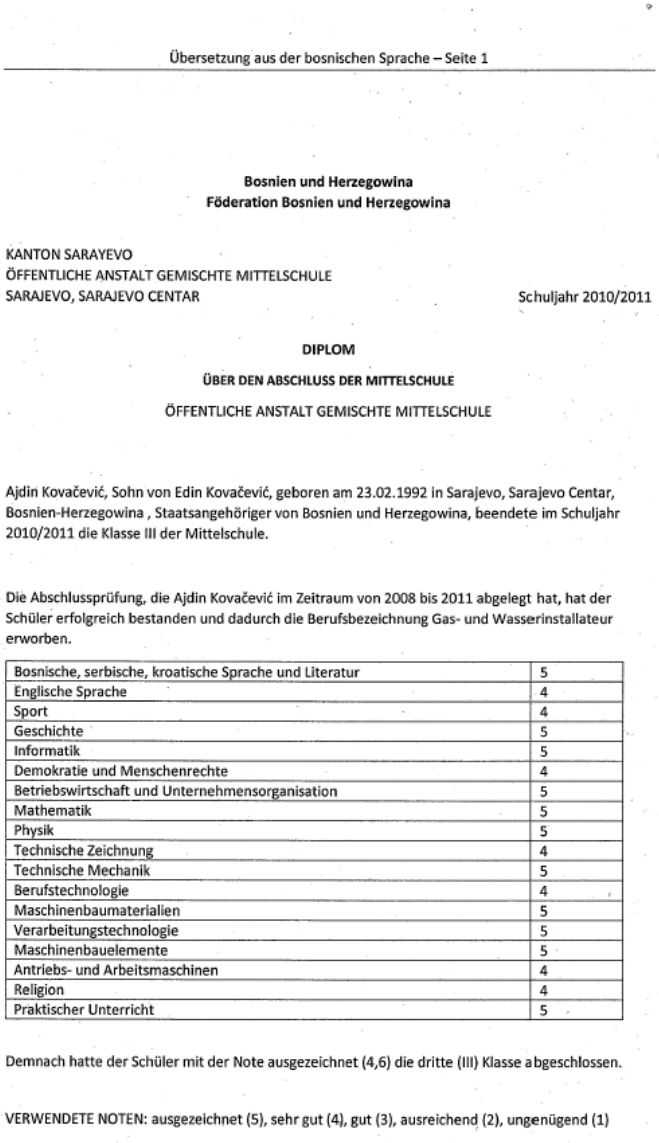
Gegen diesen Bescheid ist der Widerspruch zulässig. Dieser ist innerhalb eines Monats nach Bekanntgabe dieses Bescheids schriftlich oder zur Niederschrift bei der Handwerkskammer Mannheim, Rhein-Neckar-Odenwald, B1, 1-2, 68159 Mannheim, einzulegen. Die Schriftform kann durch die elektronische Form ersetzt werden. In diesem Fall ist das elektronische Dokument mit einer qualifizierten elektronischen Signatur im Sinne des Signaturgesetzes zu versehen und unter anerkennung@hwk-mannheim.de einzureichen. Es wird darauf hingewiesen, dass bei schriftlicher oder elektronischer Einlegung des Widerspruches die Widerspruchsfrist nur dann gewahrt ist, wenn der Widerspruch innerhalb dieser Frist bei der Handwerkskammer Mannheim, Rhein-Neckar-Odenwald eigegangen ist.

Mit freundlichen Grüßen

i.A.

Morei Affeldt

Figure A.13: School diploma (Page 1)



Übersetzung aus der bosnischen Sprache – Seite 1

Bosnien und Herzegowina
Föderation Bosnien und Herzegowina

KANTON SARAYEVO
ÖFFENTLICHE ANSTALT GEMISCHTE MITTELSCHULE
SARAJEVO, SARAJEVO CENTAR

Schuljahr 2010/2011

DIPLOM

ÜBER DEN ABSCHLUSS DER MITTELSCHULE

ÖFFENTLICHE ANSTALT GEMISCHTE MITTELSCHULE

Ajdin Kovačević, Sohn von Edin Kovačević, geboren am 23.02.1992 in Sarajevo, Sarajevo Centar, Bosnien-Herzegowina , Staatsangehöriger von Bosnien und Herzegowina, beendete im Schuljahr 2010/2011 die Klasse III der Mittelschule.

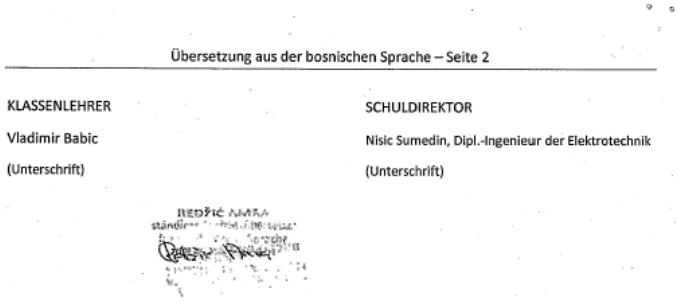
Die Abschlussprüfung, die Ajdin Kovačević im Zeitraum von 2008 bis 2011 abgelegt hat, hat der Schüler erfolgreich bestanden und dadurch die Berufsbezeichnung Gas- und Wasserinstallateur erworben.

Bosnische, serbische, kroatische Sprache und Literatur	5
Englische Sprache	4
Sport	4
Geschichte	5
Informatik	5
Demokratie und Menschenrechte	4
Betriebswirtschaft und Unternehmensorganisation	5
Mathematik	5
Physik	5
Technische Zeichnung	4
Technische Mechanik	5
Berufstechnologie	4
Maschinenbaumaterialien	5
Verarbeitungstechnologie	5
Maschinenbauelemente	5
Antriebs- und Arbeitsmaschinen	4
Religion	4
Praktischer Unterricht	5

Demnach hatte der Schüler mit der Note ausgezeichnet (4,6) die dritte (III) Klasse abgeschlossen.

VERWENDETE NOTEN: ausgezeichnet (5), sehr gut (4), gut (3), ausreichend (2), ungenügend (1)

Figure A.14: School diploma (Page 2)



Übersetzung aus der bosnischen Sprache – Seite 2

KLASSENLEHRER

Vladimir Babic

(Unterschrift)

SCHULDIREKTOR

Nisic Sumedin, Dipl.-Ingenieur der Elektrotechnik

(Unterschrift)

A.2 Employer Responses and Characteristics

Table A1: Response rates for different candidates

Response	No Recognition	Not yet	With Recognition
Invitation	39.41	36.94	34.88
Further questions	6.32	5.10	4.01
Request for callback	11.15	9.55	9.88
Hang-up	3.72	1.27	2.78
Rejection	15.99	15.29	15.74
Confirmation of receipt	4.46	3.82	4.32
No response	18.96	28.03	28.40

Table A2: Summary statistics: Firm characteristics

Variable	Obs.	Mean	Min.	Max.
Callback	750	0.55	0	1
Firm Size				
20-50	750	0.43	0	1
50-500	750	0.48	0	1
>500	750	0.09	0	1
Location				
East	750	0.20	0	1
West	750	0.80	0	1
Industry				
Constr., Water, Elect.	750	0.61	0	1
Manufacturing, Wholesale	750	0.14	0	1
Accomm., RE, Educ., Arts, Public	750	0.20	0	1
Collective Agreement				
No collective agreement	750	0.66	0	1
Collective agreement	750	0.34	0	1

B Survey Experiment

B.1 Presented Text in German

Deutschland braucht Fachkräfte. Rund 40 % aller Handwerksbetriebe geben an, Probleme bei der Besetzung offener Stellen zu haben. Die Rekrutierung von ausländischen Fachkräften könnte den Bedarf an Fachkräften vermindern. Doch häufig stehen die Betriebe vor dem Problem, dass sie den Inhalt und die Qualität der ausländischen Qualifikationen nicht richtig einschätzen können. Die Anerkennung von ausländischen Berufsqualifikationen hilft bei der Personalrekrutierung, indem sie es Betrieben erleichtert, die mitgebrachten Qualifikationen der Bewerber zu bewerten. Bei der Berufsanerkennung wird von den zuständigen Institutionen (IHK, HWK etc.) geprüft, ob und in welchem Umfang die ausländischen Berufsqualifikationen den deutschen Berufabschlüssen entsprechen. Doch erleichtert die Anerkennung von ausländischen Berufsqualifikationen tatsächlich die Rekrutierung von ausländischen Fachkräften in der Praxis? Dieser Frage ist die Universität Mannheim und das Wissenschaftszentrum Berlin für Sozialforschung in einer Studie nachgegangen. Im Rahmen eines Experiments wurden Bewerbungsunterlagen von Anlagemechaniker für Sanitär-, Heizungs- und Klimatechnik konstruiert. Diese Bewerbungen wurden auf offene Jobangebote geschickt. Dabei wurde bei einer Hälfte der Bewerbungen der Gleichwertigkeitsbescheid mitgeschickt. Insgesamt wurden im Zeitraum zwischen Juni 2018 und September 2019 ca. 700 Bewerbungen deutschlandweit versendet. Zu unserem Erstaunen wurde in diesem Experiment festgestellt, dass Bewerber mit einer

Anerkennung seltener zu einem Bewerbungsgespräch eingeladen wurden als Bewerber, die keinen Gleichwertigkeitsbescheid mitgeschickt haben. Woran dies liegt, kann die Studie leider nicht beantworten. Möglicherweise wurden Bewerber ohne Gleichwertigkeitsbescheid bevorzugt, da diese nicht als Fachkräfte eingestuft werden und somit "günstiger" sind. Wie sehen Sie als Praktiker das? Wenn Sie eine Vermutung haben, würden wir uns freuen, wenn Sie diese hier notieren würden:

B.2 Pilotstudy

In the next step, I conducted a pilot study in July 2020. It shall help to determine design issues and other unforeseen problems with the survey before the full-scale experiment is conducted. I contacted by mail 118 employers from the correspondence test pilot study. In the mail, the participants were informed about the correspondence study and were invited to participate in the survey by clicking on the web link, which was linked to the survey, to see the correspondence test. The response rate was relatively low. Even after repeated reminders, only nine employers participated in the survey. However, three of them dropped out. Similar to the experience from the correspondence test, the employers' interest was limited, as this employers' response points out, "Please note that management is withdrawing from all studies." [...nehmen Sie bitte zur Kenntnis, dass die Geschäftsleitung von allen Studien Abstand nimmt.] (Employer from Bremen).

C Survey Data

C.1 IAB-BAMF-SOEP-Data

Table A3: Analysis samples after cases were excluded from the original samples

	Immigrants	Refugees
Original sample	9,923	9,897
– German-born individuals	1,937	15
– No education abroad	4,487	7,933
– Missing information on qualifications	313	640
Analyses sample	3,186	1,309