Does recognition of foreign certificates improve immigrants’ labor market chances?

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Abstract

A large body of empirical research has demonstrated that foreign education is a major cause of ethnic disadvantages in the labor market. However, there are few insights into how these disadvantages of the foreign-trained can be countered effectively. To improve skilled immigrants’ access to adequate jobs, several countries have introduced policies to officially recognize foreign educational credentials. In this study, we first test whether having recognized foreign credentials improves foreign-trained immigrants’ chances of being hired. Second, we examine whether recognition closes the gap between native- and foreign-trained applicants in the labor queue. Third, we analyze the relevance of recognition at different career stages. Using vignettes, we simulate a hiring process and show randomized profiles of applicants to employers who rate how likely they are to invite applicants to a job interview. As expected, we find that recognition significantly improves the chances that immigrants are hired for skilled jobs commensurate with their education. However, recognition does not close the gap to native-trained applicants. Moreover, our results indicate that the benefits of recognition decrease with applicants’ work experience. Thus, recognition is a promising tool to highlight young immigrants’ skill potential and reduces disadvantages of the foreign-trained in the labor market. However, recognition does not create equal opportunities between native- and foreign-trained applicants.

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Author note

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**Introduction**

In the competition for skilled jobs, foreign-trained immigrants join the labor queue behind candidates with native qualifications (Damelang and Abraham 2016). In addition to differences in the quality of human capital, the transferability of foreign educational credentials to the receiving labor market is essential (Chiswick and Miller 2009). Normally, employers rely on educational credentials to screen for suitable workers. Being less familiar with education abroad, employers remain uncertain about the productive capacity implied by foreign credentials and do not recognize them as equivalent to native ones (Li 2001). Given this informational discrimination (Cain 1986), employers are likely to preclude immigrants from accessing positions commensurate with their foreign qualifications.

To facilitate the labor market integration of foreign-trained immigrants, political actors and employers’ associations in most OECD countries have introduced specialized bodies and procedures to formally assess and recognize foreign credentials (OECD 2017). In these recognition procedures, foreign credentials are reviewed for their authenticity and equivalence with comparable training courses in the host country. Employers obtain credible information about foreign equivalents to native qualifications, which reduces uncertainty in hiring decisions and informational discrimination. Hence, recognition should reduce the disadvantages of foreign-trained immigrants by improving their chances to access positions that correspond with their foreign qualifications.

Although recognition policies are in place in several countries, the body of empirical research on their effects is lacking. There is tentative evidence that recognition allows foreign-trained immigrants to enter qualified jobs more quickly (Kogan 2012) and to occupy jobs with higher occupational status (Kogan 2012, 2016). Brücker et al. (2016) show that individuals with fully recognized foreign credentials are significantly more likely to be employed and earn more than individuals who did not seek recognition of their foreign credentials. Other studies found that undergoing recognition procedures – or comparable qualification assessments for establishing visa eligibility – tends to reduce incidences of overqualification (Damas de Matos and Liebig 2014; Kler 2006), particularly among immigrants from lower-income countries that often come from very different educational systems (Liebig and Huddleston 2014).

A major shortcoming of these studies is that researchers have been unable to establish proof of the causal relationships between foreign credential recognition and labor market outcomes. Given unobserved individual traits, it is impossible to determine whether recognition leads to
better outcomes or whether individuals who are able to find more favorable employment in any case succeed in having their credentials recognized.

Through the present study, we are the first to directly measure the causal effect of foreign credential recognition on immigrants’ chances of accessing employment in accordance with their foreign qualifications. To identify the causal effect, we simulate a hiring process for skilled jobs in a survey experiment. In the absence of longitudinal data, an experimental design is ideal to avoid that unobserved personal traits, such as motivation and ambition, bias the effect of recognition on labor market outcomes.

Using the factorial survey method (Auspurg and Hinz 2015), we present random sets of hypothetical foreign applicants with varying characteristics to managers who have a say in hiring decisions. These hiring decision makers rate how likely they are to invite the applicants to a job interview for a hypothetical vacancy at their firm. We focus on employers’ hiring decisions because employers are the central gatekeepers of the labor market (Bills et al. 2017, 293) that decide whether they will hire immigrants for jobs that match their (recognized) foreign qualifications. Ultimately, recognition will only pay off if employers hire accordingly.

In our experimental design, the applicants have different credentials. Some of them have a native credential, some obtained full recognition in the host country of their foreign credential, some were granted only partial recognition, and some had not yet sought recognition of their foreign credential. We describe all applicants, both native- and foreign-trained, as foreigners to ensure that the effect of recognition on employers’ ratings is not confounded with that of being a foreigner. Keeping to a minimum the differences in individual characteristics, we follow Zeng and Xie (2004) and Lancee and Bol (2017) and rule out ethnic discrimination by design.

With this design, we address three research questions to examine the effects of recognition. First, we test whether foreign credential recognition is an effective tool for reducing informational discrimination and improving foreign-trained applicants’ chances of accessing adequate jobs. To this end, we compare the chances of foreign-trained applicants holding non-recognized credentials with those who obtained recognition. Second, we examine whether recognition closes the gap between native- and foreign-trained applicants in the labor queue. We examine this gap by comparing native-trained applicants with foreign-trained applicants who obtained full recognition. Third, we analyze the relevance of recognition at different career stages of foreign-trained applicants, considering that educational credentials will be most relevant for young professionals but become less important as professional experience
increases. Thus, recognition should play a minor role in the hiring process for more seasoned professionals.

To date, a large body of empirical research has demonstrated that foreign education is a major cause of ethnic disadvantages in the labor market. However, there are few insights into how these disadvantages of the foreign-trained can be countered effectively. Foreign credential recognition is a relatively new policy measure that promises societal benefits beyond the employability of immigrants themselves. As a tool to promote social justice and equal opportunity, recognition can make a significant contribution to the integration of immigrants and, thus, prevent ethnic conflicts in internationalizing societies. From an economic perspective, it may help with meeting short-term labor shortages as well as securing a sufficient workforce in the long run.

Our survey experiment concerns skilled jobs in the intermediate vocational segment of the German labor market and considers its vocational diversity. We surveyed employers for three frequently demanded occupations, each representing a distinct vocational segment: logistics managers, precision machinists, and hotel specialists. For logistics managers and precision machinists, we draw unique, representative samples of employers in Germany, whereas we rely on a sample from a professional firm database for hotel specialists.

Foreign credential recognition in the vocational segment of the German labor market is a relevant case in several respects. Given its economic prosperity, Germany has developed into the country with the second-highest permanent immigration inflows, reaching similar levels as those for the United States. In 2016, more than one million people migrated to Germany (OECD 2018). Currently, approximately two-thirds of immigrants bring vocational and/or academic credentials (Seibert and Wapler 2015), making them much more highly qualified than immigrants in previous decades (Kogan 2011). To enhance the integration of the foreign-trained population in the labor market and avoid immigrant “brain waste” (Sumption 2013), Germany reformed its institutional arrangements for foreign credential recognition by introducing a “Recognition Act” (BQFG). This new legislation became effective in 2012 and widely expanded recognition opportunities in the vocational segment. Improving recognition policies is highly relevant considering Germany’s significant shortage of skilled labor, which puts actual pressure on firms to hire skilled immigrants (Vollmer 2015).
Skilled migration is growing in importance. Globalization and increasing mobility of workers, such as marked by the free movement of the workforce within the European Union, lead to an ongoing internationalization of national labor markets (OECD and UN-DESA 2013). However, being educated abroad is an obstacle for labor market integration. Strong empirical evidence exists that the place of education plays a crucial role in the stratification process and that foreign schooling leads to lower returns than native schooling (Arbeit and Warren 2013; Kanas and van Tubergen 2009; Zeng and Xie 2004).

One undisputed argument for explaining ethnic inequalities in the labor market is immigrants’ lower endowment with human capital (Chiswick 1979). Because most immigrants come from less developed countries, they have less human capital than natives. Moreover, some part of human capital is country-specific and cannot be transferred from one country to another (Chiswick and Miller 2009; Friedberg 2000). In addition to the limited transferability of human capital, Lancee and Bol (2017) highlight the limited transferability of degrees. Drawing on credentialing theory, they argue that foreign degrees have a lower signaling value relative to native ones and, thus, are less valuable in the host country.

To understand how employers consider applicants with different credentials, we rely on screening theories of labor market allocation (Stiglitz 1975). Because applicants’ skills are largely unknown prior to hiring decisions, employers attempt to gather information through a screening process. In this screening process, they are likely to consider educational credentials to reduce the risk of making bad hiring decisions (Bills 2003). The extent to which an educational credential serves as a reliable screening device depends on whether the employer can comprehend the training input and skills reflected by the credential. Employers generally have a good understanding of native qualifications, which stem from the familiar national education framework, and gather substantial experience with holders of native credentials. Thus, employers can easily select suitable applicants with native credentials.

Although screening along native credentials is relatively straightforward, it is more difficult when there are applicants with foreign schooling. Because employers are less experienced with foreign educational systems, they have less information about the skills and productivity that foreign credentials accredit. Given employers’ uncertainty about foreign education, foreign-trained immigrants are not able to exploit the original value of their qualification and incur
penalties in the hiring process. Following the statistical discrimination approach, employers cope with uncertainty by using information about the average productivity of groups and attribute it to individuals (Aigner and Cain 1977; Phelps 1972). If employers anticipate that the productivity of foreigners is lower on average, they will impute lower productive capacity to foreigners regardless of their individual characteristics. In the competition for jobs, this informational discrimination implies a de facto devaluation of foreign education, ceteris paribus (Cain 1986). As a result, immigrants with foreign educational credentials will be disadvantaged and inferior to native-trained applicants in the labor queue.

The institutional context of the German labor market

Immigrants’ opportunities to find employment commensurate with their foreign qualifications are likely to depend on institutionalized school-to-work linkages in the host country (Kogan 2016; Lancee 2016). Therefore, we briefly introduce the institutional context of the labor market and occupational recognition procedures in Germany before deriving our hypotheses.

Germany has a very strong linkage between educational credentials and occupational positions (DiPrete et al. 2017), which means that native occupational credentials largely govern the access to skilled jobs. Primarily, occupational credentials are earned in the dual system that provides vocational education and training for 327 distinct occupations across various sectors. Entered by 56% of a cohort, this educational track is the major supplier of skilled workers for the labor market (GOVET 2016). In the dual system, apprentices acquire skills at both vocational schools and the workplace. Apprenticeships follow vocation-specific curricula and nationally defined standards for the quality and content of training. Consequently, employers in Germany heavily rely on native credentials to screen for applicants with the matching set of vocational skills for the concerned occupation. These credentials serve as reliable signals of education and indicate that job applicants have acquired specific occupational skills (Abraham et al. 2011; Di Stasio and van de Werfhorst 2016).

The distinct system of matching educational profiles to jobs exacerbates the limited transferability of foreign degrees and limits the chances of skilled immigrants in the hiring process. Given the strongly institutionalized match between native credentials and jobs, informational discrimination against holders of foreign qualifications is likely to be high and the foreign-trained will struggle in a competition with native graduates. Accordingly, international comparisons show that the relative unemployment risk of foreign-trained
immigrants is larger in countries with strong school-to-work linkages, such as in Germany (Lancee 2016). To catch up with native-trained applicants, immigrants must convince employers that they have the same knowledge and readily applicable skills for the occupation in which they desire to work.

One strategy that immigrants can pursue to improve their chances of being hired for jobs corresponding to their foreign education is to enhance employers’ level of information by providing them with credible assessments of foreign credentials. Several countries have institutionalized official procedures for the recognition of foreign credentials by specialized bodies (OECD 2017). These procedures release employers from less reliable individual assessments and translations of unfamiliar credentials, enabling them to more easily compare foreign qualifications with their native counterparts.

**Foreign credential recognition in Germany**

Occupational recognition procedures in Germany are governed by the Recognition Act (BQFG). Its declared purpose is “to improve the use of professional qualifications acquired abroad so that holders of such qualifications can find work commensurate with those qualifications on the German labor market” (BQFG, Part 1, Section 1). The law grants all holders of foreign qualifications who intend to work the option of undergoing an assessment to determine whether a foreign qualification and its German qualification of reference are formally equivalent. Assessments are conducted by the competent chamber authority for the reference occupation.

Recognition-seekers must submit an application including their foreign educational credential(s), a listing of completed courses and work history, and proof of professional experience to the chamber in charge. The chamber then assesses whether the foreign qualification is equivalent to a native qualification by examining its authenticity and the differences in the foreign vocational curriculum vis-à-vis the German reference occupation. If the foreign qualification falls short of the native requirements for training content and duration, authorities may take into account (foreign) work experience.

Following the assessment, the chamber issues an official notification stating the recognition outcome. If the authority does not find considerable differences, it recognizes foreign education as equivalent to a German qualification (full recognition). If foreign education proves
insufficient, the authorities provide an explanatory statement to the decision that indicates the
gaps in existing skills and experience (partial recognition). Finally, if the chamber determines
that the difference between the foreign qualification and its German qualification of reference
is too great to establish any equivalence, it may not recognize the foreign qualification.

Whereas recognition is a precondition for exercising licensed occupations in Germany, such as
doctors and lawyers, it is optional for working in the non-licensed occupations concerned in our
study. Nonetheless, recognition may also serve as an important signal for employers in non-
licensed occupations and, thus, should increase the chances of accessing adequate jobs. Since
the Recognition Act was enacted, yearly applications for occupational recognition in the non-
licensed segment have more than doubled, from 2,214 in 2012 to 5,001 in 2015. Assessments
mostly result in full equivalence (62.9%) or partial equivalence (33.7%) of the foreign
qualification. Thus, applying for the procedure without achieving either form of recognition
(3.4%) appears to be a rare occurrence (BMBF 2017). However, these statistics are biased to
some extent because some applications are withdrawn without entering official statistics. Given
the costs invoked by the recognition procedure, which may include recognition fees and
additional expenses for procuring application documents (i.e., translations, certifications, and
journeys for delivery or pickup) that depend on the individual case, some interested parties do
not apply (BMBF 2017) or withdraw unpromising applications to save the fees that would be
due if they were fully processed (OECD 2017).

Hypotheses on the effects of recognition on chances of being hired

Following screening theory, immigrants with foreign educational credentials will be
disadvantaged and inferior to native-trained applicants in the labor queue. Foreign credential
recognition aims at reducing informational discrimination by employers and, thus, the
disadvantages of foreign-trained applicants.

We derive three hypotheses on the effects of recognition on the chances of being hired. First,
we examine whether recognition improves foreign-trained applicants’ chances of accessing
adequate jobs (improvement hypothesis). Second, we analyze the extent to which recognition
reduces disadvantages of foreign-trained workers on the labor market. More specifically, we
test whether recognition closes the gap between native- and foreign-trained applicants (gap
hypothesis). Third, we analyze whether recognition becomes less effective as labor market
experience increases. In this career stage hypothesis, we consider that educational credentials
and their recognition status will be crucial for young job-seekers at labor market entry but less important for seasoned professionals.

Regarding our improvement hypothesis, we expect that obtaining recognition of foreign credentials makes it easier for employers to assess foreign-trained applicants and, thus, improves hiring prospects. Official confirmation that a foreign qualification is equivalent to its native counterpart increases the signaling value of foreign education because it assures employers that foreign-trained applicants have relevant skills for their occupational destination. This reduces employers’ uncertainty in the assessment of applicants with foreign qualifications and increases the chances that employers hire these applicants, ceteris paribus. In addition to this intended effect of recognition, recognition can also improve chances by signaling motivation, the intention to stay in the host country, and knowledge about host-country institutions given the bureaucratic efforts of the recognition process. Because both effects simultaneously reduce the disadvantages of foreign-trained applicants, recognition should improve hiring chances.

We elaborate on this effect and generate three sub-hypotheses. First, we assume that employers prefer applicants with recognized foreign credentials relative to those without (H1a). Accordingly, we expect that employers prefer applicants with fully recognized foreign credentials relative to those whose credentials are only partially recognized (H1b) and applicants with partially recognition over those without (H1c).

With respect to our gap hypothesis, we compare native-trained applicants with those applicants who obtained full recognition of their foreign training and analyze the extent to which recognition reduces ethnic disadvantages. To rule out ethnic discrimination as a rival explanation, all applicants, both native- and foreign-trained, are of foreign nationality. We generally anticipate positive effects of recognition but note that succeeding in the recognition procedure is not equivalent to earning a native qualification. Rather, recognition is a documentation of formal equivalence that makes international qualifications more easily comparable for employers. Because the recognition procedure is usually limited to a formal skill assessment, it deviates from apprentice examinations in Germany’s training system in which applicants’ occupational skills and competences are tested in practice. Moreover, the foreign-trained arrived in Germany only recently, whereas holders of native credentials were trained in Germany and thus have lived in the country for a longer period; in fact, they might even have been born in Germany. The longer duration of stay may signal additional favorable
features, such as familiarity with the host countries’ culture, greater social integration, and other country-related knowledge that employers deem relevant.

For these reasons, we anticipate that employers will not perceive applicants with fully recognized foreign qualifications as fully adequate replacements of native-trained applicants. Rather, employers will prefer applicants with native credentials relative to those with recognized foreign credentials (H2).

In our career stage hypothesis, we focus on the effects of recognition conditional on work experience. We expect that the benefits of recognition decrease with work experience. In the early stage of an applicant’s career, education is a highly relevant signal because employers have few alternative indicators for productivity (Bills 2003). With increasing occupational experience, which is a more up-to-date indicator of relevant skills and productivity, educational credentials and, thus, recognition become less relevant.

Assuming that foreign occupational experience matters to employers, we hypothesize that the benefits of obtaining full recognition of a foreign credential are higher for young and inexperienced job seekers than for seasoned professionals (H3).

**Empirical strategy**

To empirically test our hypotheses, we employed a survey experiment that allows us to determine the causal effect of foreign credential recognition on applicants’ chances of being hired in accordance with their education. In our survey experiment, we simulate a hiring process for skilled jobs using vignettes. With vignettes, one can incorporate the experimental logic into a classical survey as respondents rate descriptions of situations with characteristics that vary experimentally on several levels (Auspurg and Hinz 2015). Because our objective is to examine whether the different types of credentials affect job chances as hypothesized, we create vignettes that describe applicants with corresponding credentials and other relevant characteristics and ask responsible managers who have a say in hiring decisions to rate how likely they are to invite the applicants to a job interview.

This experimental approach is ideal for identifying causal relationships between applicants’ characteristics of interest and employers’ hiring decisions. We can directly manipulate applicants’ credentials in the vignettes and observe employers’ ratings for the entire pool of applicants. Thus, we can determine how employers rate applicants with non-recognized foreign
credentials, (partially) recognized foreign credentials, and native credentials in hiring decisions. By directly comparing employers’ ratings of applicants with these different credentials, we can also observe the extent to which credential recognition allows for foreign-trained immigrants to catch up with the native-trained applicants in the labor queue. Because we also manipulate the work experience of applicants in our experimental design, we can examine the benefits of recognition for job seekers at different stages in their careers.

In addition to the experimental variation, vignettes allow us to control other influences that could potentially confound employers’ decision making. Thus, we can avoid typical sources of uncertainty and unobserved heterogeneity that bias employers’ ratings of foreign applicants. First, we keep constant the applicants’ German language proficiency. Second, we describe all applicants, both foreign- and native-trained, as foreigners to rule out ethnic discrimination by design. Discriminatory ratings would bias the credential effects that we aim to isolate. Moreover, we do not specify applicants’ nationality. Nationalities commonly set off nation-specific stereotyping and discrimination in employers’ ratings of foreign applicants (Koopmans et al. 2018). Because our goal is to measure the effects of recognition on the chances of being hired and to gain insights into how the disadvantages of the foreign-trained can be countered effectively, we deviate from the discrimination literature and merely inform the respondents that all applicants presented in the vignettes are foreigners, without defining their country of origin.

**Vignette dimensions and levels**

Table 1 shows how applicants’ characteristics vary experimentally across the vignettes. In general, the candidates apply with educational credentials that match their desired occupation, which implies that they are equipped with the relevant human capital for their occupational destination. Moreover, all applicants are of foreign nationality. Corresponding with our hypotheses, they apply with different credentials and levels of occupational experience. Some applicants completed vocational training in Germany and have a native credential. Others acquired their education abroad, some of which succeeded in obtaining full recognition in Germany of their foreign credential, some only obtained partial recognition, and some had not yet sought recognition of their foreign credential. With respect to occupational experience, the applicants are just starting their professional careers at age 21, have 2 years of work experience at age 23, or a substantial 9 years of work experience at age 30.
To minimize the risk that the respondents rate the applicants in a socially desirable way, we introduce additional characteristics in the vignette description (Wallander 2009). Because we deliberately do not specify applicants’ citizenship, we balance this lacking information by modeling differences in the quality of educational systems. We use public expenditures on education relative to Germany’s as a proxy for the quality of the educational system. In the case of German credential holders, information about the quality of the German educational system is likely redundant for employers. Therefore, the information on the quality of the educational system refers to the applicants’ country of origin. In this way, we provide background information on the applicants’ home country rather than the quality of her education. In our multivariate models, we adjust for this dimension by keeping it constant. Moreover, we describe the institutional organization of the training system that the applicants attended using three common types of training organization: school-based, firm-based, or dual. Although dual vocational training is most common in Germany, there are alternative training tracks, and we also vary this information for German credential holders. Finally, we include some reference from the applicant’s previous employer, the applicant’s salary expectation, and the applicant’s sex in the vignette.

[Table 1 here]

In a foreword to the vignettes, we introduce additional relevant information to control for potential confounders. First, we hold applicants’ level of general education constant by stating that all applicants have a secondary school certificate comparable to that normally required for entering vocational training programs in their occupation in Germany, with a good grade point average. Second, we presuppose that the foreign-trained immigrants recently arrived in Germany and all applicants have unrestricted German residence and work permits.

Following the vignette introduction, we present each respondent with six vignettes describing foreign applicants for a hypothetical vacancy. We obtain the ratings one by one because we only display one vignette description at a time, as shown in table 2. Based on the description, we ask the respondent to rate the likeliness that they would invite the applicant to a job interview at their firm on a scale from 1 “very unlikely” to 7 “very likely.” In the supplementary material, part I, we present two more vignette examples, one example for a foreign-trained applicant who
did not yet seek recognition (table S1) and one example for a German credential holder (table S2).

Table 2 here

Case selection and data collection

Our survey experiment concerns the vocational segment of the German labor market. As previously mentioned, this segment is very diverse, with 327 occupations exercised across different sectors. A key strength of our data is that they take into account this vocational segmentation. To draw broad conclusions on the benefits of recognition across different vocational segments, we survey employers of three occupations. We select logistics managers, precision machinists, and hotel specialists. Logistics managers represent white-collar jobs and mainly work in the industry and trade sector, precision machinists represent blue-collar jobs in the manufacturing and craft sector, and hotel specialists are selected for the catering and service sector.

The selected occupations are suited to the application of our survey design in three respects. First, they are skilled yet non-licensed occupations, in which employers may hire foreigners regardless of formal credentials but usually demand vocational education and training credentials. Second, employers should generally be willing to consider our hypothetical pool of foreign applicants given that firms in Germany are currently short of skilled workers and apprentices in these occupations. Third, our selection avoids bias from general inclination or disinclination to hire foreigners in our survey results because the share of foreign workers in these occupations is approximately the same as the overall average across all occupations.

To survey managers who have a say in hiring decisions for the selected occupations, we rely on unique samples of employers in Germany. Following occupation-specific strategies for sampling and data collection, we ensure that our survey experiment extensively covers each occupation.

Obtaining representative samples of employers of logistics managers and precision machinists is challenging because these occupations can be concerned with various products and services across different sectors. Restricting the sample to employers from a particular sector would fail
to take into account this variety. Thus, we rely on official employment history data that allows us to identify all firms in Germany that employ at least one logistics manager or precision machinist. Because these data are compiled from filed social security notifications, they provide a complete list of employers with workers subject to social security contributions in the respective occupation at the time of reporting. From this list, we drew a stratified sample by firm size (1–9, 10–49, and 50–249 workers). The sample for each occupation consists of 2,700 firms. In the firms, we target managers of logistics managers and precision machinists who are responsible for hiring decisions. As immediate supervisors for the respective occupations, these managers have significant expertise in the occupation-specific job and skill requirements at their firm. Thus, we contacted the sampled firms in computer-assisted telephone interviews to screen for suitable respondents and recruit them for participation in our study. After the interview, we invited all interested parties by email to our online survey.

Employers of hotel specialists are more easily identifiable because they are commonly found in the hotel sector. We could more conveniently approach employers by drawing a random sample of 2,000 hotels in Germany, stratified as previously described from the firm database of a major provider (Schober Information Group), and inviting them to participate in our online survey by email.

We survey the employers of the three occupations using a harmonized online questionnaire and vignette design. The logistics manager survey was conducted between January and March 2016, the precision machinist survey between September and November 2016, and the hotel specialist survey in October 2016. The overall mean response rate was 12.3%. Thus, our achieved response is within the range of other surveys among firms (Baruch and Holtom 2008) even though our target group is especially difficult to interview at the workplace given managers’ heavy workload and responsibilities. Because of the experimental variation and randomized allocation of vignettes to respondents, we analyze the causal effects of recognition on employers’ decisions.

For the analyses, we pooled the collected data into one dataset. After excluding respondents who quit the survey before completion of the vignettes, 2,364 vignette ratings by 394 employers (146 for logistics managers, 114 for precision machinists, and 134 for hotel specialists) are analyzed. In the following, we refer to this pooled data for a more concise description of results and a better overview. Naturally, we will point out any occupation-specific results that deviate from the pooled data.
According to self-reported information from the questionnaire, our survey respondents are, on average, 48 years old, predominantly male (66%), and German-born (95%). Moreover, approximately two-thirds of the respondents have a university or technical college qualification (65%). With 56% working as employees or in similar forms of employment, a large share of participants is self-employed (44%) and almost all participants (93%) are responsible for personnel decisions. The median size of their firms is 20 employees. Moreover, almost half of these firms (45%) were recruiting skilled employees in the occupation of interest at the time of interviewing. In line with earlier surveys among German employers (BMBF 2015: 33), few respondents in our sample have experience with recognized foreign qualifications (14%). For more detailed information on representativeness of our sample and on the vignette sets, please see the supplementary material, part II.

Results: Foreign credential recognition and immigrants’ likeliness of being invited to a job interview for a skilled job

To investigate the likeliness that employers invite the applicants described in the vignettes to a job interview for a position commensurate with their education, we use multilevel regression models. Multilevel modeling is appropriate for our analyses because it accounts for the multilevel structure of error terms in our hierarchical survey data (vignette and respondent level). Our basic regression model contains all vignette dimensions, an identifier for the three occupations, and variables at the respondent-level to control for firm and individual characteristics. These control variables include the number of employees in the firm, whether the firm is currently searching skilled workers, whether the respondent has previous experience with recognized foreign qualifications, and whether the respondent was born in Germany. Table S6 in the supplementary material, part III, shows the coefficients for the variables in a standard regression table.

In this section, we present in a more illustrative manner the effects of applicants’ characteristics on the likeliness that employers invite them to an interview. We estimate predictive margins, which report the average outcome for specified combinations of covariates (Jann 2014; Williams 2012). These predictions allow us to compare employers’ average rating of applicants with distinct combinations of characteristics in our data.

Our hypotheses 1 and 2 focus on the main effects of applicants’ credentials. In two panels, table 3 shows the results for this first set of hypotheses. The upper panel shows the predicted
likeliness that employers invite applicants with the four different credentials (German, fully recognized, partially recognized, and foreign credential) to an interview on the scale from 1 (very unlikely) to 7 (very likely). These predictions follow a clear pattern: Applicants with German credentials rank highest in the labor queue with a predicted likeliness of being invited of 5.193. Applicants with fully recognized credentials have a remarkably high rating of 4.987, and applicants with partially recognized credentials reach a score of 4.853. Applicants with foreign credentials are at the lower end of the labor queue (4.663).

In the lower panel of table 3, we test our improvement (H1a–c) and gap hypotheses (H2). Regarding the improvement hypothesis (H1a–c), we predict that recognition reduces disadvantages of foreign-trained applicants by improving their chances of being hired. The results confirm H1a–c. We find that obtaining full recognition of a foreign credential significantly improves the chances of being hired for an adequate skilled position by .324 points, with the other characteristics in our model held constant. Moreover, it makes a difference to employers whether applicants obtain full or partial recognition of their foreign credentials. Because foreign qualifications that are recognized as fully equivalent to their German counterpart reflect better endowments with relevant vocational skills for the desired occupation, employers rate applicants who obtained full recognition .134 points better than foreigners who have only partially equivalent qualifications. However, employers also acknowledge partial recognition, which improves the likeliness of being invited by 0.190 points relative to holders of foreign credentials who did not seek recognition.

Regarding our gap hypothesis (H2), it becomes apparent that employers do not perceive fully recognized foreign credentials as equivalent replacements of native ones. There remains a significant gap, as hypothesized in H2: foreigners who obtained their qualification in Germany have a .206 point better chance than those who have formally equivalent qualifications from abroad. That is, recognition narrows the gap between native and foreign training, but does not close it.

[Table 3 here]

Turning to the career stage hypothesis (H3), we analyze the effect of recognition conditional on applicants’ level of experience, that is, whether the benefits of recognition are greater for young
and inexperienced job-seekers than for more seasoned professionals. Thus, we added a two-way interaction of the vignette dimensions credential and occupational experience to our regression model.

The predictions from this expanded model are shown in table 4. The upper panel shows that foreign graduates without any additional occupational experience can significantly improve their chances of being invited to a job interview by having their foreign qualification recognized as fully equivalent to a native one. With full recognition, the chances increase by almost half a scale point, from 4.189 to 4.623. In contrast, the bottom half of the table shows that, for the most seasoned professionals in our vignettes who have nine years of foreign work experience, the effect of full recognition is clearly lower at .226 points and on the brink of statistical significance. Thus, over the nine-year span of applicants’ occupational experience, the effect of recognition is roughly halved. This finding demonstrates that the benefits of foreign credential recognition decrease with foreign work experience, confirming H3.

[Table 4 here]

Occupation-specific results

Our study empirically covers the vocational diversity of the German labor market. The participants are employers in three occupations: precision machinists, logistics managers, and hotel specialists. Occupation-specific analyses reveal that foreign credential recognition appears to be less relevant for hotel specialists than for precision machinists and logistics managers, as hotel managers’ ratings of applicants with native, (partially) recognized, and foreign qualifications do not differ significantly (see table S7 in the supplementary material, part III). There are three conceivable explanations for why foreign-trained hotel specialists are invited regardless of whether their qualification is recognized. First, hotel managers may be more familiar with foreign qualifications than employers in the other two occupations, making it less likely that informational discrimination occurs. In our questionnaire, less than one-third of the managers of precision machinists (31.4%) and logistics managers (26.8%) state that they have experience with foreign qualifications, whereas among managers of hotel specialists, this figure is more than half (53.2%). Second, one could argue that the organization and operation of hotels is very similar internationally and, thus, the tasks that hotel specialists carry out are
comparable across countries. Third, the jobs of hotel specialists are more easily divisible into distinct tasks than the other two occupations, allowing employers to more flexibly assign foreign- and native-trained workers. If they expect that foreign-trained workers are incapable of performing a certain task or that their productivity is insufficient in a field of work, they may sub-divide jobs and assign foreign- and native-trained specialists accordingly.

Conclusion and discussion

In this study, we analyze the causal effects of foreign credential recognition on employers’ hiring decisions. Formal credential recognition aims to provide employers with credible information about the skills that foreign-trained applicants come with and reduce employers’ uncertainty in hiring decisions. Consequently, recognition should improve immigrants’ chances of being hired for jobs that correspond with their foreign education.

Using vignettes, we simulated a hiring process among 394 employers in Germany and evaluated the likeliness that they would invite foreign applicants to interviews for skilled jobs commensurate with their education. As expected, we find that recognition improves the chances that immigrants are hired for adequate jobs. Employers rate foreign-trained applicants significantly better if they apply with recognized credentials. However, recognition does not completely bridge the gap in the chances between foreign- and native-trained applicants. This finding reflects that employers do not consider foreign-trained applicants with recognized credentials as equivalent to native-trained applicants. Rather, foreign credentials may signal a lack of relevant host-country specific knowledge and social integration that cannot be absorbed or only partially absorbed by recognition.

Moreover, our results indicate that the benefits of recognition decrease with applicants’ work experience. This finding is plausible because work experience is a more up-to-date indicator of productivity than prior education. This finding is also informative regarding how employers interpret recognized credentials. Employers do not necessarily view recognized credentials as reflective of formally equivalent skills. From successful recognition, employers could also deduce strong motivation to integrate in the host labor market, along with relevant institutional knowledge to master the procedure. However, if recognition merely served as such a motivational signal, employers should reward recognition similarly regardless of work experience, and full or partial recognition, respectively. In our data, we find that inexperienced
workers benefit the most from recognition, suggesting that employers predominantly use recognition to infer relevant skills in the absence of other signals of productivity.

Notably, our study is based on a hypothetical hiring process rather than factual hiring behavior. One may question whether, in our experimental simulation, employers’ stated intentions to invite reflect their real-world invitation decisions. However, validation studies show that there is a close nexus between vignette-based and real-world decisions (for example, Hainmueller et al. 2015). This lends support to the external validity of vignette studies and suggests that our methodology is well suited to infer actual hiring behavior. Accordingly, several studies on hiring behavior successfully employed such survey experiments (e.g., Auer et al. 2018; Damelang and Abraham 2016; Di Stasio and van de Werfhorst 2016; Protsch and Solga 2017).

Our survey experiment provides valuable insights into how ethnic disadvantages in the labor market can be reduced because we show that foreign credential recognition significantly reduces informational discrimination by employers and narrows the gap between the foreign- and the native-trained applicants. For skilled immigrants, limitations in the transferability of their foreign credentials are a major drawback to their successful integration in the receiving economy. However, often there are further obstacles that impede the economic integration of migrants, such as a lack of language skills and networks, which cannot be overcome by foreign credential recognition alone.

With regard to social equality, recognition promotes the democratization of opportunities because it is an effective tool to foster the labor market integration of skilled immigrants in accordance with their qualifications. In contrast, recognition systems can potentially lead to unintended discrimination (Lodigiani and Sarli 2017). For example, if recognition procedures are socially selective because they involve high costs and demand bureaucratic efforts, some immigrants will not participate in them although they would be entitled to do so. As a result, recognition may turn into an instrument that systematically discriminates between immigrants who are able to master the procedure and immigrants who are not.

Our findings have implications for policy makers. Overall, employers are receptive to recognized qualifications, although they have little first-hand experience with them. Nevertheless, there is much untapped potential. Considering the benefits for immigrants’ economic integration as substantiated in our study, it appears promising to promote awareness of recognition opportunities among holders of foreign qualifications and to make the procedure more easily accessible.
Table 1: Variation in applicants’ characteristics in the vignettes

<table>
<thead>
<tr>
<th>Vignette dimensions</th>
<th>Vignette levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credential</td>
<td>German</td>
</tr>
<tr>
<td>Occupational experience</td>
<td>None (age 21)</td>
</tr>
<tr>
<td>Quality of educational system</td>
<td>Lower</td>
</tr>
<tr>
<td>Organization of training system</td>
<td>School-based</td>
</tr>
<tr>
<td>Reference</td>
<td>Motivated, good performer</td>
</tr>
<tr>
<td>Salary expectation</td>
<td>Significantly below average</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
</tr>
</tbody>
</table>
Table 2: Example of a vignette describing an applicant with a fully recognized credential

<table>
<thead>
<tr>
<th>Among the applicants, there is a 21-year-old female from a foreign country. In total, this country invests less in education than Germany.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The applicant has recently completed three years of vocational training as a logistics manager in her country of origin with good grades and has not yet gained additional occupational experience. Her vocational training was in a vocational school. She was able to obtain full recognition in Germany of her qualification.</td>
</tr>
<tr>
<td>The candidate is business fluent in both spoken and written German. According to a reference letter from her last employer, she is very motivated and delivers excellent professional performance.</td>
</tr>
<tr>
<td>The applicant’s salary expectation is significantly below average.</td>
</tr>
</tbody>
</table>

**How likely are you to invite this applicant to an interview?**

<table>
<thead>
<tr>
<th>Very unlikely</th>
<th>Please tick a number</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

**N.B. Varying dimensions are underlined; outcome of recognition procedure was omitted for applicants with a German credential.**
Table 3: Employers’ ratings of applicants by credential

<table>
<thead>
<tr>
<th>Credential</th>
<th>Predicted likeliness of getting invited</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>5.193 ***</td>
</tr>
<tr>
<td></td>
<td>(0.091)</td>
</tr>
<tr>
<td>Fully recognized</td>
<td>4.987 ***</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
</tr>
<tr>
<td>Partially recognized</td>
<td>4.853 ***</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
</tr>
<tr>
<td>Foreign</td>
<td>4.663 ***</td>
</tr>
<tr>
<td></td>
<td>(0.090)</td>
</tr>
</tbody>
</table>

Hypotheses 1 & 2

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a: Fully recognized &gt; Foreign</td>
<td>0.324 ***</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
</tr>
<tr>
<td>H1b: Fully recognized &gt; Partially recognized</td>
<td>0.134 *</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
</tr>
<tr>
<td>H1c: Partially recognized &gt; Foreign</td>
<td>0.190 *</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
</tr>
<tr>
<td>H2: German &gt; Fully recognized</td>
<td>0.206 **</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
</tr>
</tbody>
</table>

Predictive margins obtained from mixed effects multilevel regression; s.e. in parentheses
DV: Likelihood of getting invited for a job interview (1 "Very unlikely" - 7 "Very likely")
Controls: all other vignette dimensions & on respondent-level: Number of employees,
Currently looking for skilled employees, Experience with recognized foreign qualifications,
Born in Germany
Table S6 in the supplementary material shows the coefficients for all the variables in a
standard regression table

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
Table 4: Employers’ ratings of applicants by credential and occupational experience

<table>
<thead>
<tr>
<th>Interaction effects</th>
<th>Predicted likeliness of getting invited</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3: Benefits of recognition decrease with work experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign credential, no experience</td>
<td>4.189 (0.108)</td>
<td>0.434 ***</td>
</tr>
<tr>
<td>Fully recognized credential, no experience</td>
<td>4.623 (0.111)</td>
<td></td>
</tr>
<tr>
<td>Foreign credential, 9 years of experience</td>
<td>5.008 (0.120)</td>
<td>0.226 +</td>
</tr>
<tr>
<td>Fully recognized credential, 9 years of experience</td>
<td>5.235 (0.123)</td>
<td></td>
</tr>
</tbody>
</table>

Predictive margins obtained from mixed effects multilevel regression with two-way interaction effects of certificate and work experience; s.e. in parentheses
DV: Likelihood of getting invited for a job interview (1 "Very unlikely" - 7 "Very likely")
Controls: all other vignette dimensions & on respondent-level: Number of employees, Currently looking for skilled employees, Experience with recognized foreign qualifications, Born in Germany
*** p<0.001, ** p<0.01, * p<0.05, + p<0.1
References


