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Abstract

This article analyses the conditions under which employers grant immigrants access to jobs corresponding to their foreign education. It is often observed that employers prefer native-educated employees and devalue foreign education. We argue that part of this devaluation is due to institutional differences in education systems. Nevertheless, hiring foreign-educated immigrants is becoming a viable strategy for employers given the substantial shortage of skilled labour and the significant influx of skilled immigrants. Using a factorial survey, we simulate a hiring process and present a series of hypothetical foreign applicants to employers in Germany. Our findings show that the transferability of foreign qualifications strongly depends on the institutional characteristics of foreign education systems. However, employers are willing to accept differences in education because they consider institutional differences a trade-off against other dimensions, such as relevant foreign work experience.

Keywords

employers, factorial survey, foreign education, immigration, labour market

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Introduction

The purpose of this study is to examine how employers act with regard to foreign education in the hiring process, which is crucial to the positioning of skilled immigrants in the labour market. Employers are the gatekeepers to the labour market (Bills et al., 2017: 293) and decide whether they will hire immigrants for jobs corresponding to their foreign education. Although employers play a decisive role in the economic integration of immigrants, few empirical studies have paid explicit attention to employers' decision making. These studies predominantly focus on discrimination (Harris and Ogbonna, 2016; Zschirnt and Ruedin, 2016), whereas literature on how employers recruit immigrant workers is rare. For the construction industry, Fellini et al. (2007) show that firms attract immigrants to minimize labour costs, particularly when the labour market situation is tight. Moreover, employers are inclined to hire immigrants for labour-intensive jobs because they attribute a strong work ethic to them (MacKenzie and Forde, 2009). The role of foreign education in the screening process, however, has rarely been investigated.

Research on the supply side unequivocally shows that foreign schooling is of lesser value on the labour market than domestic schooling (Arbeit and Warren, 2013; Kanas and Van Tubergen, 2009; Zeng and Xie, 2004). Undisputed explanations of immigrants' disadvantage include that their human capital is of lower quality and not fully transferable to the receiving country (Chiswick and Miller, 2009). Moreover, following the statistical discrimination approach, if employers are uncertain about immigrants' skills and assume lower productivity of immigrants on average, they will ascribe this lower productive capacity to individuals regardless of their individual characteristics (Aigner and Cain, 1977; Phelps, 1972).

Consequently, employers typically devalue foreign education and prefer native-educated employees with familiar educational records and careers. Accordingly, Damelang and Abraham (2016) show that the average native-educated applicant prevails over the foreign-educated applicant in the hiring competition. Nevertheless, in times of labour shortages and free movement of workers, hiring foreign-educated immigrants can be part of firms' recruiting strategies. In this case, employers face a pool of applicants who fall short of the 'optimal' native-educated employee.

If this pool consists of immigrants educated in different countries, the applicants differ with regard to more than just their individual characteristics, such as educational certificates and work experience. Foreign-educated applicants also differ with respect to the institutional framework in which they have been educated. For instance, some education systems convey rather general skills (e.g. England, Italy), whereas individuals from countries with more vocationally oriented education systems are equipped with more vocation-specific skills (e.g. Denmark, Germany) (Breen, 2005).

National institutional arrangements of education systems have several implications for the way employers screen job applicants (Di Stasio and Van de Werfhorst, 2016). In countries where education provides graduates with more general skills, employers predominantly screen for signals of trainability, such as grades. In contrast, in countries with highly vocation-specific frameworks for education, employers place greater emphasis on occupation-specific degrees that reflect applicants' productivity.

This study investigates how employers rate foreign-educated applicants, with a special focus on the institutional arrangements of education systems in the country of origin and the host country. More specifically, it addresses the question of whether employers trade off unfavourable characteristics of foreign education against other favourable attributes to find suitable candidates. We assume that national differences in education systems play a decisive role in immigrants' chances to access skilled positions that correspond to their education.

The study focuses on positions in the intermediate skilled segment of the German labour market. This segment constitutes the major part of the labour market. Thus, access to this segment is key for skilled immigrants' labour market integration. Given our interest in the role of foreign education in hiring decisions, the skilled segment of the German labour market is an ideal case because there is a very strong link between educational certificates and occupational positions (DiPrete et al., 2017). In this setting, foreign-educated immigrants struggle to enter the intermediate skilled segment because the chances of getting hired are highly conditional on having a domestic certificate (Solga and Konietzka, 1999). Accordingly, international comparisons show that the relative unemployment risk of individuals educated abroad is larger in countries with vocationally oriented education systems that are standardized nationwide, such as in Germany (Lancee, 2016). Moreover, Germany's economic strength makes it a major destination country for labour migration within the European Union (Brücker et al., 2017). Approximately two-thirds of current immigrants come with vocational and/or academic certificates (Seibert and Wapler, 2015) and are thus much more highly qualified than immigrants in previous decades were (Kogan, 2011). Additionally, Germany is currently experiencing significant shortages of skilled labour, which should pressure firms to hire skilled immigrants (Vollmer, 2015).

Using a factorial survey design, we simulate a hiring process and interview managers who have a say in hiring decisions. In an online survey, these managers assess hypothetical foreign-educated applicants who recently migrated to Germany. For each candidate, the respondents rate the likelihood that they would invite the candidate to a job interview at their firm. Several recent studies on hiring behaviour have relied on such survey experiments because they are ideal to identify the causal effects of single candidate characteristics on employers' ratings (e.g. Auer et al., 2018; Damelang and Abraham, 2016; Di Stasio, 2014; Di Stasio and Van de Werfhorst, 2016; Protsch and Solga, 2017).

The research design takes into account the distinct occupational segmentation of the German labour market and comprehensively analyses the labour market chances of foreign-educated immigrants. We cover the vocational diversity of skilled jobs by surveying employers for three frequently demanded occupations that represent distinct occupational segments and industries: logistics managers, precision machinists and hotel specialists. For logistics managers and precision machinists, we use unique, representative samples of employers, whereas we rely on a professional firm database for hotel specialists.

This study provides new insights into the stratification and production of ethnic inequality in internationalizing labour markets and contributes to the literature in two ways. First, it generates knowledge on how employers rate foreign-educated applicants in the hiring process. The results show that the transferability of foreign qualifications depends

on the institutional characteristics of the education systems in which foreign qualifications are obtained. Migration studies have only recently begun to incorporate this interplay between sending and receiving countries (e.g. Diehl et al., 2016). Very few studies have focused on cross-country differences in educational institutions (e.g. Ebner and Helbling, 2016; Lancee, 2016) and none have considered the interplay between institutions in the country of destination and the country of origin. Second, by incorporating theories on personnel selection in the specific situation of a tight labour market, this study provides new perspectives on the relationship between education and job assignment in migration research. The analyses show the conditions under which employers are more or less likely to grant immigrants access to jobs corresponding to their foreign education.

Theory

In hiring decisions, employers usually compare individuals from a pool of candidates with one another and select the most suitable one. Extensive literature on personnel selection addresses the question of which applicant fits the advertised job best and which applicant features best predict future productivity and behaviour (e.g. Cartwright and Cooper, 2008; Cole et al., 2007). This literature often neglects the fact that on many occasions, none of the available candidates perfectly fits the job description. Especially when qualified labour is in short supply, employers must assess applicants with different strengths and weaknesses. A typical hiring decision would be, for example, to decide between a young and inexperienced applicant who holds a fitting certificate and a more experienced applicant without an appropriate certificate. Surprisingly few studies have examined how employers trade off the various characteristics of job applicants against each other.

There are a few exceptions in the literature on overqualification, which builds on the assumption that there is an optimal level and content of education for a job. If employers are unable to hire the optimal fit, they must decide whether an over- or underqualified person is best suited for the job. Most studies on hiring behaviour in this context have focused on the likelihood that over- or undereducated applicants will be hired overall (e.g. Bills, 1992; Shen and Kuhn, 2013; Verhaest et al., 2016). Only a few have specifically examined whether applicants can compensate for an unsuitable education with other relevant characteristics. For instance, in a qualitative study by Kulkarni et al. (2015), employers report that applicants must make up for formal over- and undereducation with occupational experience. Di Stasio and Van de Werfhorst (2016) show that employers' trade-offs differ with the institutional context. They find that in the Netherlands, where occupation-specific education is essential to start a career, employers do not substitute occupational skills for higher education because they prefer applicants with occupation-specific qualifications. Dutch employers are thus likely to select applicants with matching fields of study. In England, in contrast, relevant knowledge is more often conveyed on-site. English employers are thus more willing to hire overeducated candidates who are likely to be easily trainable on the job and who can quickly adapt specific skills.

This small body of research is limited to trade-offs between the characteristics of native-educated applicants. When employers' hiring decisions concern applicants who

were educated in different countries, the trade-offs become more complex. In the following, we propose arguments about the characteristics employers emphasize in their hiring decisions. Building on this, we derive hypotheses about how employers trade off different combinations of characteristics against each other in the hiring process.

The relationship between education and job assignment

To understand how employers rate immigrants from different countries in hiring decisions, the institutional linkage between education and work must be considered. In Europe, country differences in education systems prevail despite attempts to harmonize them (European Centre for the Development of Vocational Training, 2009). Institutional approaches (Thelen, 2004) stress that education systems vary particularly with respect to two characteristics: standardization and vocational specificity.¹ Standardization ensures that competences acquired in the education system are comparable over time and space (Allmendinger, 1989). If institutionalized rules define which competences are conveyed during education, graduates' quality of knowledge, skills and abilities will be very similar nationwide and will vary little between individuals. Vocational specificity indicates the extent to which education is occupation-specific and conveys practical skills (Ryan, 2003). In vocationally oriented systems, education provides more vocation-specific skills, such as coordinating logistics processes, assembling mechanical tools or managing hotels' booking systems, in addition to general skills such as literacy and numeracy. Consequently, vocationally educated graduates are immediately productive in the respective occupation and do not need much additional training (Blossfeld, 1992). In contrast, graduates from education systems that predominantly convey general skills acquire occupation-specific skills primarily on the job (Maurice et al., 1986). Germany's education system is known for its high standardization and vocational specificity, whereas education in England, for example, is less standardized overall and conveys more general rather than occupation-specific skills.

Due to these institutional differences, graduates from different countries have educational degrees that refer to the same level of qualification but vary in the type of skills acquired (Breen, 2005). This has consequences for the screening process. In Germany, firms' work organization for skilled jobs is closely adapted to the domestic education system (Marsden, 2000). In this institutional setting, employers select suitable applicants for a vacant position by screening for vocation-specific skills and degrees that follow uniform educational standards.

We expect that immigrants' chances of being hired for skilled jobs in Germany depend on whether their foreign education meets employers' demand for standardized vocation-specific skills. With regard to institutional linkages between education and work, we thus hypothesize that foreign-educated immigrants from systems that are likewise standardized and vocationally oriented will fare better in the competition for skilled jobs. In other words, the more similarly institutionalized the foreign system, the more likely employers are to hire an applicant.

(H1): Employers prefer foreign-educated applicants if they come from standardized and vocationally oriented education systems.

Trade-offs in hiring decisions

Institutional approaches suggest that employers in Germany will prefer education obtained in standardized and vocationally oriented systems. In Europe, the vast majority of countries do not have such systems (Lancee, 2016). As a result, most immigrants have less-developed occupational skills and come with rather general qualifications, which are not necessarily standardized. Thus, employers will consider the majority of foreign-educated immigrants to be mismatches. The institutional differences in education systems reduce immigrants' chances to access skilled positions that correspond with their foreign education.

Given these institutional differences, which characteristics will encourage employers to hire foreign-educated immigrants for skilled jobs despite the fact that they come from the 'wrong' education system? In the following, we derive four hypotheses regarding how employers may trade off the institutional differences in foreign education. We argue that employers may tolerate immigrants' lack of standardized vocation-specific education when immigrants have relevant foreign work experience (H2), when employers can rely on positive third-party experience with foreign-educated immigrants (H3), when immigrants' quality of foreign education is high (H4) and when employers are used to providing on-site training (H5).

A first possible means to compensate for coming from an unfavourable education system is relevant work experience. Work experience is a strong indicator of actual skills and productivity. If an applicant has worked in an occupation that requires tasks equivalent or similar to the vacant position, this should serve as a particularly strong productivity indicator for employers. Moreover, work experience is a more recent indicator than formal education and provides more up-to-date information. Consequently, we hypothesize that as work experience increases, employers pay less attention to institutional differences in education systems. Seasoned foreign-educated professionals can compensate for a lack of standardized vocation-specific education.

(H2): Employers trade off non-standardized and non-specific education against relevant work experience.

Second, we argue that institutional differences in education systems will be less important to employers if they can fall back on other parties' positive experience with comparable foreign-educated employees. According to rational herding theory (e.g. Banerjee, 1992; Oberholzer-Gee, 2008), employers are likely to adapt their hiring behaviour to that of other employers. Provided with positive third-party experiences, employers may anticipate a good job match regardless of institutional differences in education. Thus, we hypothesize that positive third-party experience with foreign-educated employees from a specific country can compensate for the disadvantageous characteristics of foreign education systems.

(H3): Employers trade off non-standardized and non-specific education against third parties' positive experience with employees from the respective country of origin.

Third, one can assume that employers are willing to compromise on institutional differences in education if the general quality of foreign education is higher. For graduates from higher-quality education systems, employers should anticipate greater ability and productivity. Furthermore, the quality of the education system in a country is closely linked with its level of economic and technological development (OECD, 2013), which suggests that employers should prefer foreign-educated immigrants from countries with higher educational quality. Accordingly, employers rate applicants from France and England more highly than they rate applicants from Bulgaria and Turkey (Damelang and Abraham, 2016). Consequently, we hypothesize that higher levels of educational quality can compensate for immigrants' less standardized and less vocation-specific education.

(H4): Employers trade off non-standardized and non-specific education against a higher quality of the applicant's foreign education system.

Fourth, we expect that whether employers tolerate institutional differences in education will depend on the amount of firm-specific human capital that is required for the job in question. In occupations that demand little firm-specific human capital, native graduates usually meet the job requirements in different firms from the outset because they bring the relevant occupational skills (e.g. in service occupations, such as haircutter, florist or hotel specialist). Consequently, their employers are accustomed to providing little on-site training and may not be willing or may not have the necessary training capacity to compensate for the less vocation-specific education of immigrants. Conversely, in occupations that require higher amounts of firm-specific human capital, firms more readily provide extensive on-site training for new hires, which is often the case in occupations in the manufacturing and trade sector (e.g. precision machinist or logistics manager). Because employers are generally more prepared to train workers on the job in these occupations, we suggest that compensating for immigrants' lack of standardized vocation-specific education will be less of an issue.

(H5): In occupations that require high amounts of firm-specific human capital, employers are more inclined to hire immigrants from non-standardized and non-specific systems than they are in occupations that demand less firm-specific human capital.

Research design

To analyse how German employers act towards applicants educated abroad, we employed an experimental study that allows us to identify causal effects of both immigrants' individual traits and the institutional characteristics of foreign education systems. Using vignettes, we simulated a hiring process for skilled jobs. Vignette studies combine experimental and survey research because participants judge stimuli in the form of descriptions of hypothetical situations with dimensions that vary experimentally on a number of levels (Auspurg and Hinz, 2015).

Table 1. Dimensions and levels of our vignettes.

Dimensions	Levels
Vocational specificity of education system	Highly vocation-specific More general
Standardization of education system	Standardized nationwide Not standardized nationwide
Quality of education system	Public expenditure on education higher than in Germany Public expenditure on education the same as in Germany Public expenditure on education lower than in Germany
Third-party experience	Positive experience of other employers in Germany No experience of other employers in Germany
Age, work experience	21 years old, no work experience 23 years old, 2 years of work experience 30 years old, 9 years of work experience
Educational certificate	Completed corresponding training Did not undergo formal training
Sex	Male Female
Selection interviews to access education programmes	Selection interviews No selection interviews

Methodologically, this approach clearly identifies how single characteristics of education systems influence hiring decisions. Most importantly, it is possible to observe for the entire pool of applicants how likely employers are to invite them to an interview and to disentangle which characteristics of applicants make invitations more likely. Moreover, it is possible to control the information about applicants that is available to employers at the time of decision making and avoid other confounding influences (Wallander, 2009), which is crucial in two respects. First, in a vignette study, one can easily fix typical sources of uncertainty and unobserved heterogeneity that may affect employers' ratings, such as applicants' language skills. Second, in vignettes, one can present applicants from different education systems without naming their country of origin. Naming the country of origin would trigger beliefs about national differences, stereotypes and discriminatory ratings that would suppress the effect of education system characteristics. A large body of research suggests that when rating foreign applicants, employers discriminate against certain nationalities (for a meta-study, see Zschirnt and Ruedin, 2016). Therefore, the vignettes presented the applicants without naming the country of origin, essentially mimicking an anonymous application procedure. In this way, this study isolates the effects of foreign education from other effects typically associated with specific citizenships.

Construction of the vignettes

The vignettes describe institutional and individual-level characteristics that determine foreign applicants' productivity. Table 1 provides an overview of the vignette dimensions and levels that vary in the applicant description.

The vignettes include three institutional characteristics of the foreign education system: vocational specificity, standardization and quality. Specificity and standardization vary on two levels. The education system from which an applicant comes is described as being either standardized nationwide or non-standardized and conveying highly vocation-specific skills or more general skills. The general quality of the system is approximated by public expenditures on education as they significantly correlate with both the quality of education systems and per capita GDP (OECD, 2013). Three levels of public expenditures on education relative to Germany are distinguished in the vignettes.

Two additional dimensions are relevant for testing the hypotheses: third-party experience and work experience. Accordingly, the vignette description includes whether other employers in Germany have positive experiences with professionals from the applicant's country of origin. Moreover, the applicants differ in age and professional experience: they are 21 years old without any work experience, 23 years old with two years of work experience or 30 years old with nine years of work experience in the respective occupation. Additionally, the applicants come either with or without an educational certificate. This means that in almost all vignettes, the applicants are equipped with relevant human capital for their occupational destination, the only exception being those without any work experience and educational certificates. Because the simultaneous evaluation of multiple characteristics minimizes the risk that employers will rate foreign applicants in a socially desirable way (Wallander, 2009), the vignettes also include the applicants' sex and whether access to foreign education is conditional on selection interviews.

Beyond the information that varies in the vignettes, other potentially confounding characteristics are held constant in the introduction to the vignettes. First, considering that employers might disregard immigrants with German language deficiencies, we introduced all of the applicants as business fluent in both written and oral German. Second, we circumvented potential legal issues by stating that all of the applicants have a valid German residence and work permit for an indefinite period. Third, all of the applicants recently migrated to Germany. Fourth, we fixed the applicants' level of general education, stipulating that they all completed secondary school with a certificate comparable to the degree typically required to access education programmes for their occupation in Germany and with a good grade point average.

In this way, we presented random sets of six applicants for a hypothetical vacancy to managers who are responsible for hiring decisions. We showed only one vignette description at a time to ensure that the respondents rate the applicants separately. Based on the description, we asked the employers to rate the likelihood that they would invite the applicant for a job interview at their firm, as shown in Table 2. We focused on hiring intentions rather than the actual hiring decision because the latter would require much more detailed information about the applicants' personal and social characteristics.

Case selection and data collection

The research design focused on hiring processes for skilled jobs in the vocational segment, which represents a major share of the German labour market. On average, 56% of each cohort enters dual vocational education. Apprenticeships are provided for 327

Table 2. Example of a vignette description of an applicant (logistics manager).

Among the applicants, there is a 23-year-old female foreigner. In her country of origin, the education and training system is not standardized nationwide; that is, there are no uniform training regulations. Training there is highly vocation-specific, which means it is closely linked to the logistics sector. To access training, there are no selection interviews. The training duration is three years. In total, this country invests less in education than Germany. In her home country, the applicant completed corresponding training with good grades and has already worked there for two years in this occupation. Other employers in Germany have already reported positive experience with logistics managers from the applicant's country of origin.

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

Very unlikely	← Please tick a number →						Very likely
1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note: Varying dimensions are underlined.

distinct occupations across several sectors (German Office for International Cooperation in Vocational Education and Training, 2016). Due to this pronounced occupational segmentation, the application of the field experiment required a distinct selection of occupations and matching employer samples. Employers in three different occupations were surveyed to gain a broad understanding of the role that foreign education plays in the employment prospects of skilled immigrants. The occupations of choice were logistics managers, precision machinists and hotel specialists. Logistics managers represent white-collar jobs in the industry and trade sector, precision machinists occupy blue-collar jobs in the manufacturing and craft sector and hotel specialists work in the catering and service sector. The online questionnaire and vignette design were harmonized for these three occupations. Although it was difficult to interview the respondents at the workplace due to their high workload and responsibilities, this study achieved a mean response rate of 12.2%,² which is within the range of other studies among employers (Baruch and Holtom, 2008). The obtained data allow for the analysis of causal effects due to the experimental variation and randomized allocation of vignettes to respondents. For the analysis, we pooled the data for all three occupations into one dataset. After excluding respondents who quit the survey early, a remarkably high number of 2262 vignette ratings from 377 respondents (139 for logistics managers, 108 for precision machinists, 130 for hotel specialists) remained for the analyses.

According to self-reports in the questionnaire, the survey respondents were, on average, 49 years old, predominantly male (64%) and German-born (92%). Moreover, more than half of the respondents had a university or technical college degree (63%). With 42% self-employed, a large share of the participants worked as employees or in similar forms of employment (58%). The vast majority (93%) were responsible for personnel decisions. The median size of firms for which the respondents worked was 20 employees. Moreover, a substantial share of these firms (40%) were recruiting skilled employees in the occupation of interest at the time of the interview and one-third of the

respondents had previous experience with foreign qualifications (35%). For further information on the case selection, data collection and representativeness of the sample, please see the supplementary material.

Results: The likelihood that employers invite foreign-educated applicants to a job interview

In our multivariate analyses, we run multilevel regression models. These models take into account the multilevel structure of error terms, which is appropriate given the hierarchical data (vignette and respondent level). In a first analytical step, we specify a basic model that includes all vignette dimensions, an identifier for the occupation and respondent-level variables to control for firm and individual characteristics. Control variables are the firm's number of employees, whether the firm is currently recruiting skilled workers, whether the respondent is experienced with foreign qualifications and whether the respondent was born in Germany. Based on this specification, we estimate the effects of our vignette dimensions on the likelihood that employers would invite foreign-educated applicants to a job interview. The estimated coefficients for the institutional dimensions reveal employers' preferences regarding the characteristics of education systems (H1).

In a second step, we focus on hypotheses 2 to 5 and examine whether employers would trade off a lack of standardized vocation-specific education. We model these trade-offs by expanding the basic multilevel regression model with multiple interactions between the respective vignette dimensions. Presenting and interpreting the results of these complex interactions in a standard table would be confusing. Therefore, we use predictive margins that report the average predicted outcome for specified combinations of covariates (Jann, 2014; Williams, 2012). These margins reflect the likelihood that applicants with distinct combinations of characteristics would be invited to a job according to the employers' ratings. We then contrast the margins for applicants who differ in dimensions that we expect employers to trade off against each other. If the predicted ratings for these applicants do not differ significantly, we can conclude that employers make trade-offs in hiring decisions.³

Employers' ratings of applicants by individual and system characteristics

The average likelihood that employers will invite an applicant to a job interview is 4.1 points on a scale from 1 "very unlikely" to 7 "very likely", with a standard deviation of 1.9. Table 3 shows the main effects of the vignette dimensions on the likelihood of being invited to a job interview according to the basic model.

With respect to the effects of institutional characteristics of foreign education systems stipulated in H1, the coefficients show that employers favour systems that provide trainees with vocationally specific rather than more general skills and that they prefer standardized over non-standardized systems. An invitation is 0.46 points more likely for applicants from vocation-specific systems and applicants who come from standardized systems have 0.19-point higher ratings than those from non-standardized ones. These results confirm H1.

Table 3. Effects of vignette dimensions on the likelihood that foreign-educated applicants are invited to a job interview; Random-Intercept Model, Regression Coefficients.

Vocational specificity of education system (Ref.: More general)	(HI)	0.46	(0.05)***
Standardization of education system (Ref.: Not standardized)	(HI)	0.19	(0.05)***
Quality of education system (Ref.: Same as in Germany)		–	
Higher than in Germany		0.06	(0.07)
Lower than in Germany		–0.45	(0.07)***
Positive third-party experience (Ref.: No experience)		0.33	(0.06)***
Age, work experience (Ref.: 21 years old, no work experience)		–	
23 years old, 2 years of work experience		0.60	(0.07)***
30 years old, 9 years of work experience		0.90	(0.06)***
Educational certificate (Ref.: No certificate)		0.73	(0.05)***
Male (Ref.: Female)		0.09	(0.05)
Selection interviews (Ref.: No selection interviews)		0.09	(0.05)
Occupation (Ref.: Logistics manager)		–	
Hotel specialists		0.57	(0.19)**
Precision machinist		0.05	(0.18)
Constant		2.26	(0.44)***
Var (cons)		1.74	(0.14)
Var (residual)		1.37	(0.05)
Log likelihood		–3969.58	
N vignettes		6	
N employers		377	
N vignettes * employers		2262	

Coefficients obtained from a random-intercept model. Controls: number of employees, currently searching skilled workers, experience with foreign qualifications, German-born. Standard errors in parentheses.

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

Regarding the quality of foreign education, lower quality leads to lower invitation likelihood, whereas applicants from countries with a higher quality than Germany do not fare better. Moreover, if other firms report positive experiences with skilled workers from the applicant's country of origin, the likelihood of being invited increases by 0.33 points. Additionally, employers reward foreign work experience: compared to a young and inexperienced job entrant, an experienced professional with nine years of work experience has a considerably higher likelihood of getting invited (by 0.90 points); even two years of work experience increase the chances significantly (by 0.60 points). Likewise, employers rate certificate holders 0.73 points better on average. The vignette dimensions sex and selection interviews have no considerable influence on employers' applicant ratings.

The main effects of the vignette dimensions are generally very similar and comparable across occupations. Nevertheless, the coefficient for occupation shows that the likelihood that foreign-educated applicants will be invited for interviews is higher for hotel specialists than for the other two occupations. The occupation-specific respondent and firm characteristics can help to explain this pattern. According to self-reports

in our questionnaire, 88% of the participants in the hotel sample were expecting a shortage of hotel specialists. Whereas skilled labour shortages occur across all of the surveyed occupations, the situation appears less dramatic for employers of logistics managers and precision machinists (63% and 76%, respectively). The severe shortage of skilled workers in the hotel trade obviously increases the pressure to hire foreign-educated applicants. Moreover, the workforce in the hotel sector is more international by tradition. Accordingly, employers of hotel specialists stated more often than the other employers in our survey that they are experienced with foreign-educated applicants (hotel specialists: 45%; logistics managers: 27%; precision machinists: 31%). We provide more information on occupation-specific effects of the vignette dimensions in the supplementary material.

Analysing employers' trade-offs

Thus far, the results suggest that, following the strong linkage between education and work in Germany, employers favour applicants who were educated in standardized and vocation-specific systems. In the following, we shift our attention to the effects of combinations of characteristics. By comparing the predicted likelihood of invitation for different combinations of individual and institutional characteristics, we examine employers' trade-offs in hiring decisions.

The benchmark for the comparison is the 'typical' foreign-educated applicant who obtained a certificate in a non-standardized and non-specific education system with a lower quality than Germany's. We refer to this combination as typical because most countries' education systems have a less pronounced vocational orientation and the majority of immigrants come with rather general and non-standardized qualifications. Moreover, most immigrants come from economically less developed countries. Given the significant relationship between economic power and the quality of education systems (Topel, 1999), these countries will typically have lower-quality education systems.

The top panel of Table 4 shows the likelihood of being invited for the typical foreign-educated applicant compared to an applicant with the best possible combination of institutional characteristics in our vignettes. The presumably best combination refers to a foreign-educated applicant from a standardized and specific system of higher quality. On the seven-point scale, the average predicted likelihood that employers will invite the typical applicant is 4.10 points, whereas the 'ideal' applicant has an average predicted likelihood of 4.99 points. The 0.89-point difference between them is statistically significant. Given that the typical applicant is, in principle, qualified for the job in question, an invitation likelihood of 4.10 points is remarkably low. This result is in line with other studies that show that in countries with a distinct occupational segmentation, immigrants have severe difficulties finding employment that matches their training (e.g. Kreyenfeld and Konietzka, 2002).

In H2 to H5, we argue that employers will disregard institutional differences in standardization and vocational specificity under four conditions. H2 concerns the trade-off against relevant work experience. We expect that system characteristics will

Table 4. Employers' trade-offs; Random-Intercept Models, Predictive Margins.

Combinations of characteristics				Predicted likelihood of invitation	Difference
<i>The typical foreign-educated applicant vs. the best combination</i>					
Not standardized,	More general,	Lower quality		4.10 (0.14)	
Standardized,	Very specific,	Higher quality		4.99 (0.17)	0.89*** (0.20)
<i>(H2) Trade-off between education system and work experience</i>					
Not standardized,	More general,	Lower quality,	No work experience	3.76 (0.20)	
Standardized,	Very specific,	Lower quality,	No work experience	4.31 (0.22)	0.56* (0.28)
Not standardized,	More general,	Lower quality,	Nine years of work exp.	4.60 (0.24)	
Standardized,	Very specific,	Lower quality,	Nine years of work exp.	4.90 (0.21)	0.30 (0.31)
<i>(H3) Trade-off between education system and third-party experience</i>					
Not standardized,	More general,	Lower quality,	Positive experience	4.38 (0.20)	
Standardized,	Very specific,	Lower quality,	No experience	4.77 (0.22)	0.39 (0.29)
<i>(H4) Trade-off between education system and general quality of education</i>					
Not standardized,	More general,	Higher quality,		4.26 (0.15)	
Standardized,	Very specific,	Lower quality		4.67 (0.15)	0.41* (0.19)
<i>(H5) Trade-off between education system and firm-specific human capital</i>					
Not standardized,	More general,	Lower quality,	Hotel specialist	4.24 (0.26)	
Standardized,	Very specific,	Lower quality,	Hotel specialist	5.25 (0.27)	1.00** (0.34)
Not standardized,	More general,	Lower quality,	Logistics manager	3.78 (0.22)	
Standardized,	Very specific,	Lower quality,	Logistics manager	4.54 (0.26)	0.76* (0.30)
Not standardized,	More general,	Lower quality,	Precision machinist	4.35 (0.29)	
Standardized,	Very specific,	Lower quality,	Precision machinist	4.20 (0.27)	0.15 (0.36)

Margins obtained from random-intercept models including an interaction term of the vignette dimensions certificate, standardization, specificity, and quality; the interaction term additionally includes work experience for (H2), third-party experience for (H3) and occupation for (H5). The table withholds the dimension certificate as all displayed combinations refer to applicants with a certificate. Controls: number of employees, currently searching skilled workers, experience with foreign qualifications, German-born. Standard errors in parentheses.

Note: *** $p < .001$, ** $p < .01$, * $p < .05$

predominantly matter if employers cannot rely on work experience as a screening device. This is tested by comparing the chances of foreign certificate holders from different institutional contexts, conditional on work experience. First, we contrast employers' ratings of inexperienced professionals from typical unfavourable foreign systems against those from standardized and specific systems. Next, we apply the same system comparison among more seasoned professionals with nine years of work experience. In line with our arguments, the results show that with substantial work experience, the characteristics of education systems are no longer relevant to employers. For young professionals, the differences in education systems yield a significant 0.56-point difference in the likelihood of being invited for an interview, whereas there is no statistically significant difference between experienced professionals from the different systems. This finding demonstrates that work experience can compensate for initial disadvantages induced by institutional differences in education systems.

H3 stipulates that employers will tolerate unfavourable education systems when they can fall back on positive third-party experience. Employers' average rating of the typical foreign-educated applicant in combination with positive third-party experience is 4.38 points. In comparison with an applicant from a more favourable education system (standardized, vocation-specific) but without any third-party experience, the results show only a small and statistically insignificant difference (0.39 points). In line with H3, we conclude that positive third-party experience can compensate for the 'wrong' education system.

In H4, we propose that employers make concessions regarding standardized and specific education if the general quality of foreign education is high. Contrary to this hypothesis, the average predicted margins reveal that a higher level of educational quality in the sending country cannot compensate for the unfavourable characteristics of its education system. Compared to an applicant from a higher-quality but non-standardized and non-specific system, the likelihood of being invited is 0.41 points higher for an applicant from a lower-quality but standardized and specific system. This finding clearly reflects that German employers place great emphasis on vocation-specific skills following national standards. A country's general quality of education seems to provide only weak information about individual productivity, whereas standardization and vocational specificity give employers a clearer picture of the relevant skills and competencies of an applicant.

Turning to H5, we test whether the type of education is less important to employers when jobs require a high amount of firm-specific human capital. In occupations that demand substantial firm-specific human capital, employers must make considerable investments in on-site training of new hires irrespective of their training background and work experience. In the survey, 80% of the employers of precision machinists and logistics managers state that even native-educated employees require a large amount of on-site training upon hiring at their firm. In the hotel sector, only half of the surveyed firms report such additional training requirements. Work in hotel management is very similar across hotels, whereas workflows and tasks for logistics managers and precision machinists strongly depend on firms' distinct work organization on site. In line with this assumption, the findings indicate that characteristics of the foreign education system are not relevant for precision machinists but play a major role in the ratings of hotel specialists. Employers of hotel

specialists favour applicants from vocation-specific and standardized education systems, as the invitation score of such applicants exceeds that of typical foreign-educated applicants by 1.00 points. We find a similar pattern, albeit less pronounced, for logistics managers.

Conclusion and discussion

In this study, we analyse how employers rate foreign education. We simulate a hiring process among 377 employers in Germany and evaluate the chances that they will invite foreign-educated immigrants to interviews for skilled jobs commensurate with their education. Employers in Germany screen for vocation-specific skills, whereas in most countries, education systems predominantly convey qualifications that are more general. We design a factorial survey that considers these institutional differences in education systems and allows us to isolate their effects on employers' ratings.

As expected, the results indicate that the transferability of foreign qualifications strongly depends on the institutional characteristics of the education system in the sending country. Employers prefer applicants from vocation-specific and standardized foreign education systems (i.e., systems very similar to Germany's), putting applicants from other types of systems at a disadvantage.

The central finding, however, is that employers are willing to accept differences in education because they trade off the shortcomings of foreign education systems against other relevant dimensions. First, employers' emphasis on education systems decreases with relevant foreign work experience. Ratings of experienced applicants from different education systems no longer differ significantly. Second, in line with rational herding, if other firms report positive experience with foreign-educated employees from the applicant's home country, employers disregard that the applicant was educated in a different type of system. Third, employers tolerate institutional differences in education when the hiring decision involves an occupation that requires substantial investments in firm-specific human capital. In these occupations, employers typically provide additional on-site training for new hires; therefore, an initial lack of standardized vocation-specific skills is less problematic.

Some aspects of our simulated hiring process call for further discussion. One open question is whether the stated intention to hire in a survey is a valid indicator of employers' actual hiring behaviour. Validation studies find a close connection between real-world and vignette decisions (e.g. Hainmüller et al., 2015). With our vignette design, we analyse the conditions under which employers grant immigrants access to jobs corresponding to their foreign education. We describe institutional characteristics rather than naming countries of origin because in this way, we can open the black box of statistical discrimination against foreign workers and shed light on the central mechanisms of why employers devalue foreign education. Obviously, explicitly modelling institutional arrangements in applicants' countries of origin provides employers with information that they would not necessarily observe in such detail in real application procedures. However, as the labour market continues to become tighter, employers may have to rely on foreign-trained applicants to fill vacant positions. In this situation, we expect that employers will gather information about foreign educational systems to

find the most suitable candidate in a pool of foreign-educated applicants. Moreover, if labour mobility continues to increase – in 2016, Germany registered more than one million permanent immigrants (OECD, 2018) – employers will gain more and more experience with foreign-educated professionals. With increasing experience, employers will develop an awareness of differences in education systems and may hire accordingly. In addition, European countries are developing qualification frameworks that make types and levels of qualifications more visible in order to promote the comparability of qualifications and facilitate labour mobility at the European level (European Centre for the Development of Vocational Training, 2018).

To summarize, our research contributes to a better understanding of immigrants' chances and disadvantages in labour markets in two ways. First, we complement supply-side research on the effects of institutional differences on the labour market outcomes of immigrants (e.g. Kogan, 2006; Lancee, 2016) by shifting the focus to employers. Second, we incorporate theoretical arguments on the broader conditions under which employers grant immigrants access to jobs that correspond with their foreign education. Therefore, our study makes an essential contribution to recent research on the role of education and institutions for employers' hiring behaviour in different countries (e.g. Di Stasio, 2014; Di Stasio and Van de Werfhorst, 2016).

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Notes

1. Another important characteristic of education systems is stratification, which indicates whether pupils with different ability levels are sorted into separate educational tracks. In our simulated hiring process, we do not vary the level of stratification. Instead, applicants have common ability levels corresponding to the job in question.
2. We calculated response rates for logistics managers and precision machinists based on all of the contacted target persons and for hotel specialists based on all of the contacted firms. Reminder activities and response rates by occupation are as follows: logistics manager: three reminders, 13.6%; precision machinist: two reminders, 14.5%; hotel specialist: three reminders, 10.0%.
3. Technically, we use Stata's 'lincom' command to test whether predictions for distinct linear combinations of characteristics differ significantly.

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