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Skilled labour immigration: a vignette analysis on the willingness to accept migrants from outside the EU

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Abstract
Labour migration is of great economic and social importance. We use a factorial survey experiment to analyse under which criteria predominantly employed citizens approve of immigration of skilled workers from outside the EU to Germany. The criteria of the German Skilled Immigration Act for Qualified Professionals and procedural rules for checking qualifications as well as alternatives frequently discussed in the political sphere are taken into account. We find that the willingness to accept labour migrants is positively associated with (a) migrants having a definitive job offer, (b) holding (certified) professional qualifications and (c) the presence of skilled worker shortages in an industry. The vast majority of citizens favour the provisions of the act. They would also accept even less rigorous checks on qualifications.

Keywords Factorial survey experiment, Labour market, Occupational closure, Online survey, Qualifications
JEL Classification J08, J15, J18, J61, K37

1 Introduction

Labour migration is regulated by the state and can strengthen the economic and social fabric of nations, which is why there is free movement of workers with EU citizenship. With respect to workers from beyond the EU borders and against the background of changing demographic and economic requirements, EU member states try to control the immigration to support the economy on the one hand and not endanger social cohesion within nations on the other.

The population in the EU, and Germany in particular, is ageing. The labour force potential is decreasing in both proportional and absolute terms (Klinger and Fuchs 2019; ibid. (Klinger 2020)). The government has observed that 'in addition to academic staff, there is already a lack of qualified staff in many companies, sectors or regions' (Bundesregierung et al. 2019: 2). This development has been accompanied by a decline in immigration from EU member states (Fuchs et al. 2019). To achieve the desired higher influx of immigration, the German state would have to look to more distant regions and cultures (Brücker et al. 2019; Fuchs et al. 2017, 2019). In foreign schooling, training and work systems, different school and vocational training or work content is often taught or applied. In Germany, unlike in England or Canada, very specific professional qualifications are often required for labour migration. German qualifications are difficult to compare with those obtained outside the EU. This often leads to a non-recognition of vocational training or school and academic qualifications acquired outside the EU or North America (Söhn and Prekodravac 2021).

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Against this background, we pose two research questions: First, we ask to what extent individual criteria that are either strictly or loosely based on specific German professional qualification standards are acknowledged as appropriate by citizens. The analysis thus provides evidence on the importance of certain criteria that respondents find relevant when deciding on immigration. These criteria are also partly found in current legislation. Second, we analyse the extent to which respondents evaluate certain rules in the recognition of qualifications.

We utilize a factorial survey experiment in which respondents of an online survey evaluate fictitious vignettes, i.e. short descriptions of hypothetical situations, persons or objects, with a broad range of application, e.g. for unemployment (Abraham et al. 2013) or migration (Diehl et al. 2018). Our vignettes describe different fictitious immigrants with certain labour-market related attributes. As we randomly vary the characteristics of the described immigrants, the factorial survey allows us to identify the causal effect of different characteristics on respondents' answers.

Factorial survey experiments in research on the acceptance of immigrants can be similarly applied to conjoint experiments (Weiss and Tulin 2021), but are relatively rare (Czymara and Schmidt-Catran 2016). Protsch and Solga (2017) show labour market discrimination against Spanish immigrants compared to immigrants born in Germany. Diehl et al. (2018) use the case of immigrants from Europe and find support for immigration control for Eastern Europeans and low-skilled migrants in Switzerland. Mergener and Maier (2019) emphasize the critical consideration of foreign qualifications in the recruitment process. Damelang et al. (2019) find that employers are willing to accept educational differences because they trade off institutional differences against other dimensions, such as relevant international experience. Some authors examine the attitudes of the population towards immigration, producing different results on the distribution of scarce goods such as jobs or cultural differences that influence judgements about immigrants (Hainmueller and Hopkins (Hainmueller, et al., 2014b); Iyengar et al. 2013; Jasso 1988). Often, these studies relate to countries with other immigration traditions and laws, particularly the USA, and thus other procedures for recognizing occupational degrees and closure mechanisms (Bol and Weeden 2014). To the best of our knowledge, there are no analyses that explicitly discuss the acceptance of legal criteria for vocational and job-related recognition for qualified immigration.

The article is structured as follows: In Sect. 2, the institutional framework in Germany is presented. In Sect. 3, the criteria whose acceptance is analysed here are discussed in more detail. Theoretical assumptions about the acceptability of different criteria are converted into hypotheses. The data set and method—specifically, details on the factorial survey experiment and the survey sample—are explained in Sect. 4. The results of the analyses are presented and discussed in Sect. 5. A discussion of key findings in Sect. 6 finalizes the article.

2 Institutional framework

The importance of the institutionalist perspective, which among others examines local labour market conditions, has been acknowledged for a vast and diverse set of countries (Solano and de Coninck 2023). Looking at Germany, new regulations have been issued on employment-related immigration concerning migrants' residence, employment and integration within German federal territory (Residence Act) and into the Employment Ordinance (e.g. Fachkräfteeinwanderungsgesetz 2019, the 'Skilled Immigration Act for Qualified Professionals'). The aim is to 'support the securing of skilled workers through a targeted and controlled immigration of skilled workers from third countries' (BT-Drucksache 19/8285 2019).

These changes in the legal framework offer an occasion for us to take a closer look at the population's acceptance of the immigration of skilled workers. It is essential that the regulations influencing the distribution of goods in democratic states are accepted as legitimate and perceived as just (Kohl 2016; Liebig et al. 2004; Roosma et al. 2013). From an economic point of view, a substantial high net immigration would be necessary to compensate for a looming shortage of skilled workers and to secure general prosperity. This is efficient for society if public revenues from taxes and other benefits generated by migrants exceed public expenditures in the long run. However, there are also individual interests. Companies have an interest in hiring highly qualified staff. Current workers, on the other hand, may welcome foreigners to overcome perceived labour market shortages (Pecoraro and Ruedin 2020), but may also perceive immigrant workers as an economic threat, i.e., as potential competitors for jobs or as contributors to wage depression (Diehl et al. 2018; Esses et al. 2001; Facchini et al. 2013; Mayda 2006; Scheve and Slaughter 2001).

The Skilled Immigration Act for Qualified Professionals (in German: *Fachkräfteeinwanderungsgesetz*) of 1 March 2020 in particular set revised and also partially relaxed minimum requirements for skilled labour immigration from non-EU countries to Germany. A central aspect of the law is that skilled workers without academic degrees can immigrate more easily than before. Skilled worker means that the migrant has a German professional degree or a foreign professional degree that

is comparable to a German degree. Specialists in the IT industry can immigrate even without a formal qualification, if they have sufficient experience and a definitive job offer by a company. Academic as well as non-academic professionals will receive an unlimited settlement permit after four (instead of five) years if they hold a job corresponding to their qualifications and have paid pension insurance contributions for at least forty-eight months. Holders of an EU Blue Card can apply for a settlement permit after thirty-three months. There are also simplifications for obtaining a settlement permit for particularly highly qualified academic scientists and teaching staff (Brücker et al. 2019: 15). In addition, it is possible to move to Germany to search for a job or a place to study, to acquire apprenticeship positions, or to have professional qualifications recognized—but only under strictly limited conditions. Such (further) legal clarification and to some extent extension of who can be classified as a skilled worker and how easier access to the labour market can be granted to skilled workers to help surmount often bureaucratic labour market entry criteria and tests is also in line with findings of the academic literature (Parsons et al. 2020).

The most important changes from the provisions of the previously existing legal framework are the following: First, it is not only people with qualifications in so-called "bottleneck professions", i.e. professions where there is high demand for and a shortage of skilled labour, that are allowed to immigrate. Second, the priority review, according to which employment agencies determined whether other employees such as Germans or EU citizens should be preferred, was largely abolished (in an ongoing process initiated in 2016). Third, a clear definition what constitutes a skilled worker, which includes both academic and professionally qualified employees, was also introduced. Fourth, the possibilities for taking up residence through recognition of foreign professional qualifications have also been expanded and further differentiated.

In summary, the key criteria to obtain residence are a definitive job offer, moderate knowledge of German, and an appropriate type and scope of professional qualifications. More people can gain access to the German labour market through the easing of requirements, such as priority reviews and limitations on highly qualified skilled workers. Additional short-term entry options for people with a professional qualification should also increase access to the German labour market. These criteria are the basis of our theoretical discussion and facilitate the formation of hypotheses in the vignette analysis presented after the next section.

3 Theory and hypotheses

Welfare state institutions and legal regulations and the associated criteria and measures intervene in individual living conditions and structure social relationships between citizens. The Skilled Immigration Act for Qualified Professionals in particular shapes labour market supply and demand conditions. It influences the conditions for commencing work and affects the quality of work both directly, for example, by setting qualification standards, and indirectly, by influencing competitive conditions, which in turn influence wages or workplace conditions.

For the welfare state to be perceived as legitimate, it is important that citizens accept significant political measures and regulations (Kohl 2016; Liebig et al. 2004; Roosma et al. 2013). Context-dependent ideas among the population about the just distribution of scarce goods (ibid.; Allingham (Allingham, 2013)) and perceptions of fairness in regard to procedures and information play a decisive role here (Leventhal 1980). In the case of immigration, local residents may perceive immigrants as competitors for jobs (Czymara and Schmidt-Catran 2016; Facchini et al. 2013; Scheve and Slaughter 2001; Weeden 2002). However, it is also possible that overriding goals (Sherif and Sherif 1953; Sherif 1966) prevail in judgements about regulations and measures so that problems of acceptance of labour immigration do not arise.

In the following, we discuss some theoretically important criteria for acceptance of migration that are also connected to legislation.

3.1 Definitive job offer

The law grants permission to immigrate for migrants with an employer's binding commitment to take up employment for an initial period of up to four years. Immigration directly into employment does not put direct pressure on wages. We assume that the perception of a direct economic threat (Czymara and Schmidt-Catran 2016; Facchini et al. 2013; Scheve and Slaughter 2001; Weeden 2002) is low when migrants already have a definitive job offer. Such an offer also signals a low probability of receiving welfare state payments, which usually are associated with increased rejection of immigration (Czymara and Schmidt-Catran 2016; Dustmann and Preston 2007; Facchini and Mayda 2009). Rather, we predict that the reference to a definitive job offer is associated with expected tax payments and financial contributions to social security funds (Van Oorschot 2000). Therefore, we expect the following:

H1 A respondent's likelihood of approving of immigration and longer stays increases if the migrant has a definitive job offer.

3.2 German proficiency

Learning the local language, i.e. German, is particularly important for positioning oneself successfully on the job market (Brücker et al. 2014; Dustmann and van Soest 2002). In a survey of companies, the Organization for Economic Cooperation and Development (OECD), the Association of German Chambers of Commerce and Industry (DIHK) and the Federal Ministry of Labour and Social Affairs (BMAS) found that over 90 per cent of participating employers deem at least good knowledge of German necessary for employment activities at medium skilled or higher competence levels (OECD 2017: 34). Communication skills are also seen as essential for facing both professional and private challenges. Verbal communication can also be used to mitigate the negative effects of perceived cultural distance. With this in mind, we expect the following:

H2 A respondent's likelihood of approving of immigration and longer stays increases if the migrant has adequate knowledge of German.

3.3 Educational qualifications

In Germany, a professional qualification or a university degree is required for immigration. In light of human capital theory, workers are expected to try to amortize their investment in education over the course of their professional life (Becker 1964) and moving abroad can allow immigrants to seek job opportunities to better facilitate this process of amortization. At the same time, schooling and vocational qualifications provide a productivity signal for employers (Spence 1973). These credentials can signal specific technical knowledge or less directly observable personality traits such as motivation and perseverance. Professional experience is also a productivity signal. Accordingly, such attributes can be expected to be associated with favourable prospects for labour market integration and benefits for society (Van Oorschot 2000). Employment opportunities and other opportunities for social participation and integration go hand in hand (Struck 2019). A preference among receiving societies for higher educational qualifications on the part of incoming migrants has also been found in other studies (Czymara and Schmidt-Catran 2016; Hainmueller and Hopkins 2014a; Hainmueller and Hiscox 2013). Therefore, we expect the following:

H3 A respondent's likelihood of approving of immigration and longer stays increases with the migrant's educational attainment.

3.4 Professional experience

The prospects of integrating into the labour market or companies are particularly good for migrants with skills in high demand. Social efficiency is enhanced, as such workers are needed in the labour market. This increases economic productivity and at the same time ensures that migrants do not require state support. Moreover, migrant workers in high demand pose (almost) no competitive threat to resident workers in the labour market. When attention is drawn to a special need for skilled workers, potential conflicts tend to decrease in salience, as real or assumed competitive threats are mitigated or negated (Czymara and Schmidt-Catran 2016; Facchini et al. 2013; Scheve and Slaughter 2001; Sherif and Sherif 1953; (Sherif, 1966); Weeden 2002).

H4 A respondent's likelihood of approving of immigration and longer stays increases with the migrant's general work experience (H4a) and work experience in high-demand industries, such as the IT sector (H4b).

3.5 Recognition of degrees

There is a trade-off between the goal of increasing the number of qualified foreign workers on the one hand and the standards surrounding professional recognition of equivalence on the other. Degrees are very often not comparable due to the different educational systems in other nations. The complexity of the German education system and especially Germany's dual vocational training framework (Deissinger 2015) is seen as an obstacle to having qualifications recognized as equivalent or even for initiating a recognition procedure at all (Arnold et al. 2019). To date, the number of people who have completed a recognition procedure for qualifications from abroad is negligible. Overall, the path of immigration to Germany is currently blocked for many qualified specialists (Brücker et al. 2019).

Moreover, interest groups such as professional associations have an interest in raising barriers to entry with respect to certification of qualifications. This is intended to prevent income and wage competition in order to protect one's own professional group (Bol and Weeden 2014; (Gittleman, et al., 2017)). Employers, however, have an interest in increasing the number of available job candidates, so they may welcome simpler procedures for recognizing qualifications (BDA (BDA 2019)).

Several proposals to ease procedures exist. One proposal is based on Canada's recognition procedure, which waives examinations for unregulated professions with a definitive job offer. This is supported by the parliamentary

group of the Green party (BT-Drucksache 19/6542 2018; Brücker et al. 2019). The parliamentary group of the liberal Free Democratic party (FDP) introduced another proposal (BT-Drucksache 19/9924 2019: 8), namely the idea of requalification, which is linked to the possibility of recognition and certification of partial qualifications. These proposals, which are based on definitive job offers and thus take into account the specific economic and technical concerns of local employers, can increase the economic efficiency of immigration for employers and for the economy in general.

However, on the employee side, the immigration of qualified workers can mean an increase in competition or may be perceived as such (Czymara and Schmidt-Catran 2016; Facchini et al. 2013; Scheve and Slaughter 2001). This is even more important when immigrants enter the labour market under professional qualification recognition criteria that may have been (perceived to be) relaxed, thereby (seemingly) influencing the screening and wage setting power of established local labour market institutions (Koumenta et al. 2022). Not only distributional concerns and interests of professional or social closure (Bol and Weeden 2014; Weeden 2002) but also important aspects of procedural justice, such as uniform compliance with rules (Leventhal 1980), may be violated.

H5 A respondent's likelihood of approving of immigration and longer stays increases if migrants have been successfully examined according to stricter rather than laxer rules on the equivalence of professional and university degrees.

4 Methods and data

We use a factorial survey experiment as part of an online survey as the basis for our analyses. In such cases, respondents must evaluate different hypothetical scenarios—so-called vignettes. Vignettes describe fictitious situations, people or objects. Theory-based relevant characteristics of the scenarios (so-called factors or dimensions) are varied randomly as they would be in an experiment. This method bears three major advantages. First, we describe realistic situations instead of abstract items. Second, factorial survey experiments allow us to identify the causal effects of different factors on respondents' answers through random manipulation of these factors. Third, this method is robust against social desirability bias and has been successfully implemented to investigate a broad spectrum of research questions (Auspurg and Hinz 2015; Rossi and Anderson 1982; Wallander 2009). In our case, we describe different migrants who want to come to Germany (for a list of all the vignettes, see Table A.1). An example vignette is outlined below. The phrases in bold letters were randomly varied and were also highlighted this way for the respondents.

> *A person wants to migrate from a country outside of Europe to Germany. The person has* **hardly any knowledge of the German language** *and* **does not yet have a definitive job offer**. *In his or her home country, he or she has thus far* **worked for about one year**. *He or she* **does not have a certified professional degree and must try to have his or her professional activity accredited** *by German authorities and professional associations. Authorities and professional associations* **recognize the customary country-specific training criteria and certificates of the person's country of origin** *and confirm them if they are reasonably well suited professionally.*

We used pairwise correlations to check if the vignette dimensions are statistically independent from each other, which they indeed are (see Table A.2 in the appendix). Respondents were asked to indicate whether they thought the person described (1) should not be allowed to migrate to Germany at all ('no entry'), (2) should be allowed to enter Germany temporarily, or (3) should be allowed to enter indefinitely ('unlimited stay'). For option (2), respondents could also enter the number of years that they would allow the migrant to enter the country on a temporary basis. This response is the dependent variable for our analysis. Figure A.1 in the appendix shows the distribution of the variable.

There are $2 \times 2 \times 3 \times 5 \times 5 = 300$ possible combinations of levels (the vignette universe). We do not exclude any combinations (i.e. we use a full factorial design). Each respondent was asked to respond to four different vignettes. Therefore, the vignette design creates a nested data structure. The intensity of factors could vary between and within subjects. This data structure requires a multilevel analysis approach, which we explain later.

The factorial survey was part of an online survey among a sample of the German labour force. Further detailed information on the sampling strategy, survey design and field organization is available (Stephan et al. 2021). Our survey used a 2 per cent sample drawn in July 2020 from the Integrated Employment Biographies (IEB V14.01.00-190927; for a description of the IEB, see Antoni et al. 2019). The IEB registers all instances of employment in Germany, also called spells, which are subject to social security contributions. It also includes

periods of job search, participation in active labour market programmes, unemployment spells and unemployment benefit receipt. For inclusion in our survey sample, persons were required to exhibit an IEB spell during 2018 and at least one employment spell during the period 2014–2018. Only German citizens aged eighteen to seventyeight years (the realized survey maximum) at the time of data collection were included.

The contact mode for the survey was both e-mail (25,000) and postal mail (12,500) for a gross sample of 37,500. We excluded eighty-nine people whose e-mail address was no longer available and 760 people whose postal address was no longer valid. A net sample of 36,651 contacts remained; these respondents were asked to take part in our online survey during the field phase in November and December 2020. We included information about the research project and data protection regulations and referenced the project homepage, which offered additional information. Our e-mails contained an individualized link to the survey. The letter contained a QR code and a short link along with an individual password.

Approximately 50 per cent of participants answered the survey on a smartphone or tablet, and the other 50 per cent used a laptop or desktop PC. The net response can be calculated conservatively using established guidelines (AAPOR 2016). Collectively, 1,799 people started the survey, of which 1,177 (approximately 65.4 per cent) answered it fully according to our set criteria. This resulted in a net response rate for valid addresses (both e-mail and postal mail) of approximately 3.1 per cent, which means that we received a somewhat lower net response rate than other studies that target first-time respondents via a push-to-web design.[1]

Nearly 50% of our gross sample is female, 16% live in Eastern Germany, and 14% are of non-German nationality. Around two third have received occupational training and/or completed high school, and nearly 55% conducted a job that encompasses professional skills in their last job (see also Stephan et al. 2021). A particularly selective sample could distort findings also in the factorial survey experiment if, e.g. people willing to provide information apply different standards to migration than people who do not participate at all. We cannot rule out that we have some unobserved selectivity. However, unlike most studies, we are able to control for selectivity on several observables that are available in gross sample and net sample. Using probit regression for such a selectivity analysis, we find that the participation probability for our net sample is lower for Non-Germans and decreases slightly with age, which is plausible for an online study

[1] Caldwell et al. (2025a, b) use postal invitations and achieve a net response rate of 11.4% from a sample of workers in Germany. Coban et al. (2024) achieve a net response rate of 10.4% (also using financial incentives for participation) for the first wave of the IAB-OPAL, an online-panel survey among workers in Haas et al. (2021) receive a net response rate of 5.7% among workers in Germany during the COVID-19 pandemic for the high-frequency online-panel study IAB-HOPP (using no financial incentives later on, but not at the start of the study).

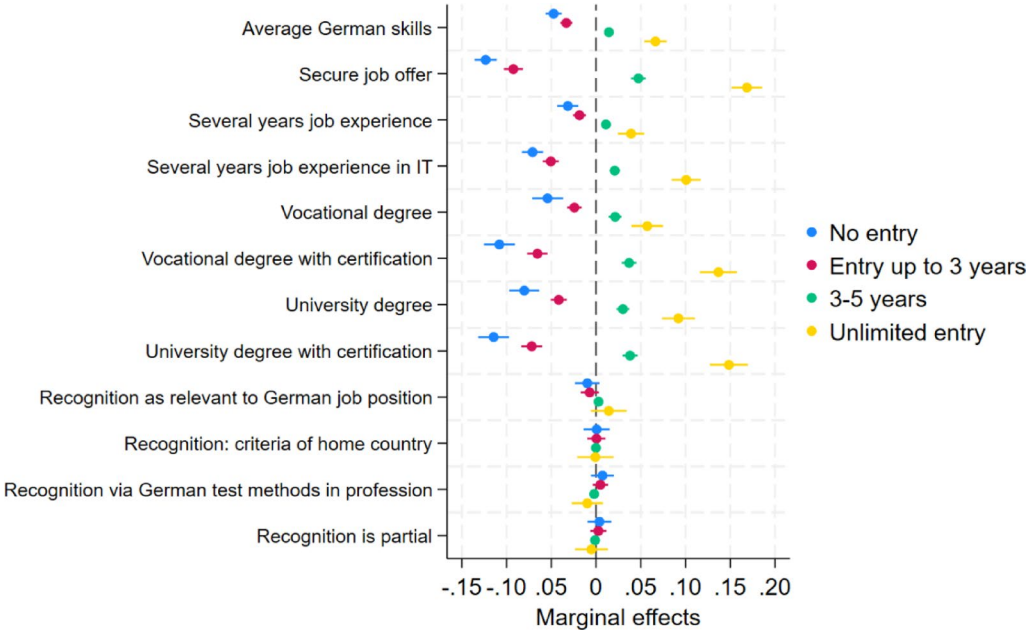

Fig. 1 Average marginal effects of vignette dimensions.
Source: Own calculations. Notes: Multilevel ordered logit estimation with average marginal effects (AME); *N* = 1,177 respondents; *N* = 4,708 Observations1

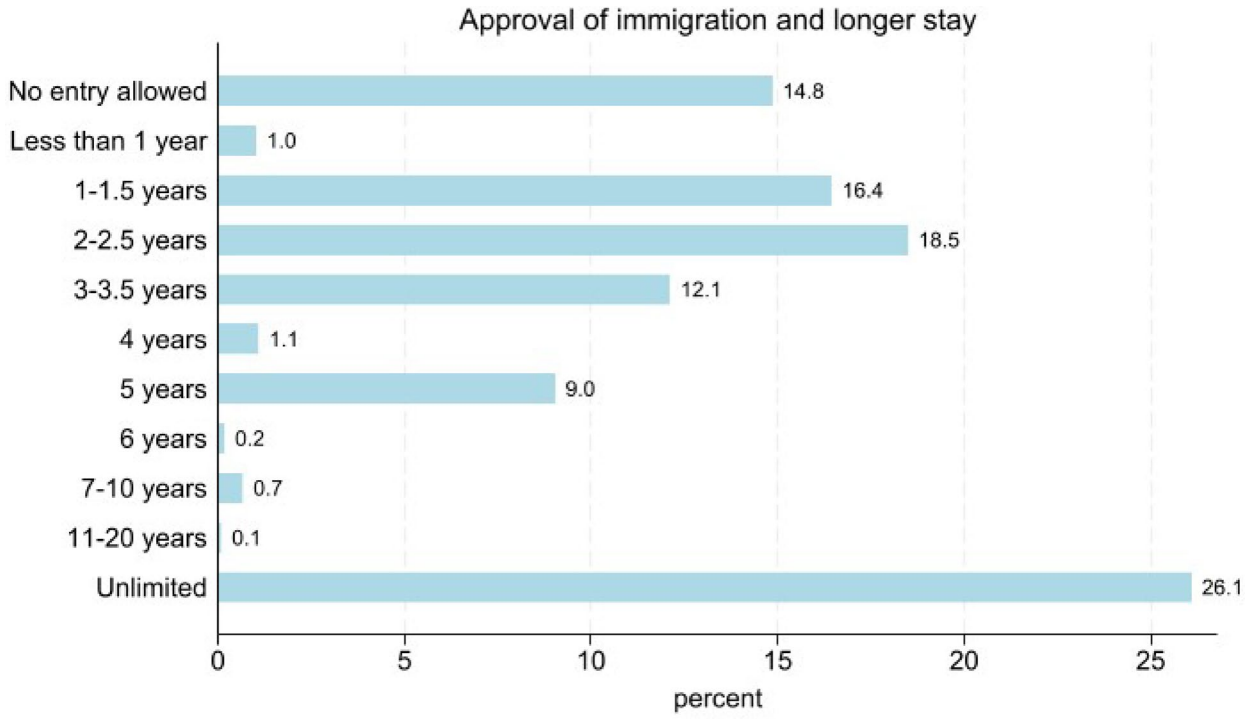

Fig. 2 Distribution of the dependent variable: approval of immigration and longer stays.
Source: Own calculations

that requires some affinity for modern communication technology and German language skills. Participation probability increases with education and the requirement level of the latest job. Effect sizes are quite large for these variables. More years in employment and with unemployment benefits during the past increase the participation rate, while years in marginal employment decrease it. Again, effect sizes are quite large (see also Stephan et al. 2021). For our final analysis, we required that no data were missing for any variable. Therefore, we have 4,708 observations in total from 1,177 persons with four observations each in a balanced set (cf. the descriptive data of A.3 for further details).

The vignette answers on skilled-worker migration from outside the EU reveal a considerable dichotomy of views, with approximately 15 per cent of observations at one extreme of wishing to entirely deny such migrants entry and 25 per cent of observations at the other extreme of permitting unlimited stays within Germany. This picture is enriched by the majority of observations falling between the two extremes. Within this category, respondents approving of stays of one to three years as well as stays of five years are very prevalent. In our analysis, we treat any response approving of stays of six years or more as an approval of stays of unlimited length. We make this decision because the responses specifying approvals of stays longer than five years are sparser and German law grants migrants a settlement permit after this period, provided that they contributed to the German Pension Insurance Fund. Therefore, we categorize respondents who approve of stays in the range of three to five years as being in agreement with the norms set by German law. Among respondents at the low end of the distribution of the period of approval of migrant entry, we make a distinction between those who approve of granting migrants access to the German labour market for any period of time, no matter how short, and those who disapprove of granting migrants any access at all; we define this denial of entry as a 'hard no'. People who approve of permitting migrants entry into the German labour market for up to but less than three years are categorized into the group that would allow entry but for a shorter period than that provided by law.

Our data now have four ordinal categories, ranging from disapproval of stays of any length, approval of stays of up to but less than three years, approval of longer stays of up to five years and approval of unlimited stays. This logical order necessitates an ordinal type of regression. As the vignette answers are nested for each respondent, we take this multilevel structure into account by

Table 1 Detailed quantification of dimensions and levels of the factorial survey experiment ($2 \times 2 \times 3 \times 5 \times 5 = 300$ possible combinations)

German language skills (2)	Job offer (2)	Working experience (3)	Degree (5)	Reaction of authorities (5)
(1a) A person wants to migrate from a country outside of Europe to Germany. The person has **hardly any knowledge of the German language**…	(2a) … and **does not yet have a definitive job offer**.	(3a) In his or her home country, he or she has thus far **worked for approximately one year**.	(4a) He or she **does not have a certified professional degree and must try to** have his or her professional activity accredited by German authorities and professional associations.	(5a) Authorities and professional associations recognize the **customary country-specific training criteria and certificates from the person's country of origin** and confirm them if they are reasonably well suited professionally.
(1b) A person wants to migrate from a country outside of Europe to Germany. The person has **intermediate knowledge of the German language**…	(2b) … and **has a definitive job offer**.	(3b) In his or her home country, he or she has **worked in a profession for several years**.	(4b) He or she must have his or her **professional degree (apprenticeship/vocational training)** accredited by German authorities and professional associations **after arrival**.	(5b) Authorities and professional associations recognize **individual sections of the previous professional qualification**. Missing individual components compared to a German degree can be caught up on.
		(3c) In the migrant's home country, he or she has **worked for several years in a profession in the IT sector, in which there is a shortage of skilled workers in Germany**.	(4c) He or she has **already** accredited his or her **professional degree (apprenticeship/vocational training)** with the German authorities and professional associations **from his or her country of origin**.	(5c) Authorities and professional associations recognize the professional qualifications and skills, for which **an employer is willing or will be willing to hire the person in Germany**.
			(4d) He or she must have his or her **university degree** accredited by German authorities and professional associations **after arrival**.	(5d) If the proof of existing qualification essential to practising a profession does not clearly follow from the documents, then authorities and professional associations will once again carry out specific **job-related examinations**.
			(4e) He or she has **already** accredited his or her **university degree** with the German authorities and professional associations **from his or her country of origin**.	(5e) Authorities and professional associations strictly apply **all rules of the German training regulations**.

One item from each column is presented uniformly at random. An example vignette text (displayed in bold font as shown, but without the parenthetical items) appears below: (1b) A person wants to migrate from a country outside of Europe to Germany. The person has **intermediate knowledge of the German language** (2a) and **does not yet have a definitive job offer**. (3b) In his or her home country, he or she has **worked in a profession for several years**. (4d) He or she must have his or her **university degree** accredited by German authorities and professional associations **after arrival**. (5e) Authorities and professional associations strictly apply **all rules of the German training regulations**

employing a multilevel regression (Snijders and Bosker 2011). Multilevel regressions can utilize fixed effects and mixed effects (Bell et al. 2019).

5 Empirical results

For our empirical analysis, we combine the vales of our dependent variable into four categories: (1) no entry at all, (2) stay for a period of less than 3 years, (3) stay for a period of 3 to 5 years, and (4) a stay longer than 5 years up to unlimited stay (short: "unlimited stay"). We then used a multilevel mixed effects ordered logit estimation and regressed the dependent variable on the vignette levels (Model 1) and later added personal characteristics (Model 2). The random slope strategy with the inclusion of "definitive job offer" improves model fit further, while remaining parsimonious (Langer (Langer, 2017)). Another reason for inclusion is that we suspected respondents to encompass, on the one hand, people with

Table 2 Pairwise correlations of vignette dimensions

Dimension	German skills	Job offer in Germany	Job experience	Certification	Recognition
German skills	1,000				
Job offer in Germany	0,013	1,000			
	(0,990)				
Job experience	−0,015	−0,020	1,000		
	(0,969)	(0,865)			
Certification	0,008	−0.026	0,010	1,000	
	(1,000)	(0,566)	(0,998)		
Recognition	−0,015	0.003	−0.007	−0,011	1,000
	(0,968)	(1,000)	(1,000)	(0,998)	

Pairwise correlations with significance tests in brackets using Dunn–Šidák correction.*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$

Source: Own calculations

a strong preference for migrant workers that can immediately contribute to society (e.g. via taxes) due to a secure job offer, and on the other hand, people with a focus on other qualifications and the potential of migrant workers. The negative covariance term also indicates an inverse relationship, as respondents generally exhibit a larger than grand average random intercept in combination with a lower than grand average random slope parameter or vice versa. Qualitatively, the random slope design strongly improves AIC/BIC and R^2 of explained variance, while the research design requirement of clustering is further indicated by the high ICC (cf. Table A.4. for more details on the mixed effects logit model with Odds Ratios). Afterwards we applied margins (Average Marginal Effects) and also provide a table with average marginal effects for Model 1 with only vignettes and Model 2 that added respondents' characteristics with a random intercept and a random slope for "definitive job offer" in the appendix (see Table A.5). Figure 1 then presents the findings for the effects of the average marginal effects of Model 1 in a more accessible format and are interpreted below.[2]

First, if the hypothetical migrant has a definitive job offer from Germany instead of none, the probability that our survey respondents grant him an unlimited stay increases by almost 17% points. Vice versa, the probability of choosing the option where entry is denied decreases by 12.5% points. The former is a very pronounced effect and the largest coefficient in the whole model. Both effects strongly support hypothesis H1. Second, if the hypothetical migrant has average German language skills instead of almost no German language skills, the probability that our survey respondents grant him unlimited stay increases by about 6.5% points. This is in line with hypothesis H2. Third, our participants approve of unlimited stays for migrants with (certified) degrees, which indicate migrants' skills, than for migrants with no degree, which supports H3. The probabilities for choosing unlimited stays are more pronounced if migrants have already accredited their vocational degrees (+13.5% points) or university degrees (+15% points) with the German authorities and professional associations from his or her country of origin compared to the case where certification has still to be done (+5.5% points for vocational training and +9% points for university degrees). Fourth, the probability of respondents granting unlimited stays increase somewhat if migrants have several years of job experience instead of one year (+4% points). This suggests that respondents generally take working experience into account (as expected in H4a). The probability for unlimited stays increases further (+10% points) if migrants have several years of experience in IT. We believe this to be an indication that respondents are more likely to accept migrants if they work in occupations where there is a high demand for workers or a shortage of skills—for IT, these skill shortages are quite well-known in Germany. This is in line with hypothesis H4b. All of the aforementioned effects are significant at a level of less than 0.1 per cent. Fifth, we find no evidence that our respondents see the importance of imposing adherence to specific test procedures strictly based on German training standards to recognize migrants' vocational qualifications. This is rather unexpected, in view of our hypothesis H5. We find no indications that respondents value recognition of (a) qualifications relevant to the German job position, (b) professional standards based on the criteria of the migrant's home country, (c) the use of German testing methods in the respective migrant's profession, or (d) partial possession of skills significantly differently from a system imposing very rigid

[2] While statistically speaking Model 2 is superior, it is also more complex and there are almost no discernible differences in the vignette effects, so we avoid the redundancy of also presenting a figure for Model 2.

Table 3 Descriptive statistics of respondents: personal characteristics

Personal characteristics	Responses	Responses in percent
Female	507	43.1
Male	670	56.9
Age groups		
Ages 18–34	338	28.7
Ages 35–49	368	31.3
Ages 50–64	433	36.8
Ages 65–78	38	3.2
Region		
German eastern states	181	15.4
German southern states	408	34.7
German northern states	463	39.3
German city states	125	10.6
Schooling		
No A-level	330	28.0
General/technical A-level	803	68.2
Other types, including from abroad	44	3.7
Occupation/Uni		
None	28	2.4
Vocation/foreman/technician	562	47.7
University	526	44.7
Other types, including abroad	61	5.2
Net household income/month		
Less than 1,000 €	79	6.7
1,000–1,499 €	103	8.8
1,500–1,999 €	105	8.9
2,000–3,000 €	257	21.8
3,000–3,999 €	247	21.0
4,000–4,999 €	171	14.5
5,000 € or more	215	18.3
Parties		
CDU (Christian Democratic Union)	155	13.2
CSU (Christian Social Union)	45	3.8
SPD (Social Democratic Party)	126	10.7
Bündnis 90/Green Party (Greens)	272	23.1
FDP (Free Democratic Party)	40	3.4
AfD (Alternative for Germany)	34	2.9
Die Linke (The Left)	96	8.2
None of above	409	34.7
Not born in German region (migration background)	106	9.0
Born in German region (no migration background)	1071	91.0
Job competition:		
Current + direct [regular job])	821	69.8
Current + indirect [unclear future job prospects]	79	6.7
In future [will be relevant as training finishes]	85	7.2
Current + immediate [due to unemployment]	114	9.7
Irrelevant [due to retirement]	78	6.6
Not much concern about economy	253	21.5
Concerns about economy	924	78.5

Table 3 (continued)

Personal characteristics	Responses	Responses in percent
Not much concern about own finances	673	57.2
Concerns about own finance	504	42.8

Responses in one category add up to 1,177 persons (except for the last variable in the table and excl. rounding errors)

German regions classified as follows: German eastern states– Brandenburg, Mecklenburg Western Pomerania, Saxony, Saxony-Anhalt, Thuringia; German southern states– Bavaria, Baden-Wuerttemberg, Rhineland Palatinate, Saarland; German northern states– Hesse, Lower Saxony, Northrhine-Westphalia, Schleswig Holstein; German city states– Berlin, Bremen, Hamburg

Job competition [situation] classified as follows: current + direct [regular job]– full-time or part-time job; current + direct [unclear future job prospects]– self-employed/freelancer, helps family business, minor employment/minijob, wage top-up recipient, (part-time) parental leave, homemaker; in future [will be relevant as training finishes]– trainee/retraining, student, volunteer (FSJ/FÖJ/Bufdi); current + immediate [due to unemployment]– unemployed; irrelevant [due to retirement]– semi-retirement zero hour contract, pensioner

Economy/own finances classified as follows: Not much concern– No concern, Slight concern; Concern– Some concern, Major concern

equivalency procedures. We interpret this as respondents foregrounding the usefulness of worker qualifications for their job and generally high migrant qualifications in their assessments. How exactly a qualification is officially recognized is not important for our respondents' views on immigration or the length of migrant stays.

6 Discussion of key findings

Labour migration is of great economic and social importance. Due to factors such as demographic change, looming skill shortages and declining numbers of migrants from the EU, Germany has changed its immigration policy vis-à-vis migrants coming from outside the EU. Recently, new employment-related immigration regulations were passed with respect to the residence, employment and the integration of migrants within the federal territory. On the one hand, immigration of skilled workers can strengthen the economy of the host society. On the other hand, it increases labour supply in the market and thus puts pressure on wages and working conditions. Consequently, the manner in which non-migrant workers assess various migrants, as well as the criteria that inform their acceptance of migrants, are of paramount importance.

Using a factorial survey experiment, which is closely oriented to existing legal regulations and currently discussed alternatives, we have examined for the first time whether citizens support the criteria specified in existing laws or which alternative rules they would accept. We find that upon evaluating specific scenarios, most respondents agreed with the entry and long-term stays of skilled workers. Particularly in vignettes in which the migrant has a definitive job offer, higher and certified qualifications and good language skills, respondents support entry and longer stays. This supports the analyses of Czymara and Schmidt-Catran (2016), Facchini et al. (2013) or Scheve and Slaughter (2001), which are less law-specific and were not focused on the practice and criteria of qualification assessment. And this corresponds to the general expectation that skilled immigrant workers, with characteristics conducive to taking up work, contribute more to the prosperity of society than the costs that they may impose on social systems (ibid.; Van Oorschot 2000). In addition, potential migrants with longer professional experience appropriate for covering the shortage of skilled workers in IT professions would be greeted with an increase in the already high willingness to grant skilled workers entry or longer stays. It is noteworthy that at the same time, respondents seldom express any concerns about competition in the labour market. Here, the population seems to trust the professional selection of employers who may offer jobs and who—according to the analyses by Damelang et al. (2019; 2020)—also pursue a pragmatic strategy in the assessment and recognition of skills, abilities and knowledge of immigrants in view of the perceived shortage of skilled workers.

Moreover, we did not expect that the very different opinions in the political sphere concerning examination of the equivalence of qualifications would have so little bearing on the views of respondents, who made no distinctions between the different proposals. Clearly, that migrants have definitive job offers and have sufficient knowledge of German or professional or university qualifications is more important to citizens than that the state conduct intensive examinations to ensure complete equivalence of qualifications and competencies.

Our study also has some limitations. First, as is typical of most surveys, there is a restriction in the sample selection. The sample does not represent the general population, but rather primarily consists of individuals from the working population. This limitation is counterbalanced by the fact that we are able to control the selectivity of the sample comparatively well. As described in the methods section, we drew our sample from the administrative data of the BA. This means that we also know many sociodemographic characteristics of our non-respondents. The

Table 4 Mixed effects ordered logic: Approval of immigration and longer stay– odds ratio

Fixed Effects (FE) Odds Ratio	Model 1	Model 2
1. Vignette features	Mixed (vignettes)	Mixed (vignettes + person)
Avg. German skills (ref: almost no German skills)	2.121** (0.148)	2.337** (0.181)
Job offer in Germany (ref: no job offer)	6.887** (0.626)	9.275** (1.154)
Job experience (ref: one year)		
Several years	1.594** (0.142)	1.710** (0.169)
Several years in IT	3.106** (0.290)	3.529** (0.367)
Certification with (ref: no degree)		
Vocational degree	2.090** (0.243)	2.298** (0.296)
Vocational degree with certification	5.043** (0.619)	6.292** (0.859)
University degree	3.123** (0.351)	3.610** (0.451)
University degree with certification	5.682** (0.705)	7.280** (1.002)
Recognition (ref: applies all Ger. rules)		
As relevant to German job position	1.172 (0.133)	1.153 (0.143)
Criteria of home country	0.991 (0.117)	0.987 (0.128)
Via German test methods in profession	0.894 (0.091)	0.857 (0.097)
Is partial	0.943 (0.100)	0.922 (0.108)
2. Personal characteristics	No	Yes
Male (ref: female)		1.049 (0.212)
Age group (ref: ages 50–64)		
Ages 18–34		1.746† (0.476)
Ages 35–49		1.043 (0.259)
Ages 65–78		2.554 (1.777)
Region (ref: German eastern states)		
German southern states		0.967 (0.294)
German northern states		1.304 (0.392)
German city states		2.328† (0.980)
Schooling (ref: general/technical A-level)		
School without A-level		0.691 (0.199)
Other types, including from abroad		2.517 (1.352)
Occupation/Uni (ref: vocation/foreman/technician)		
None		2.578 (1.588)
University		1.337 (0.354)
Other types, including from abroad		2.744 (2.647)
Net household income/month (ref: 2,000–3,000 €)		
Less than 1,000 €		1.164 (0.606)
1,000–1,499 €		1.683 (0.729)
1,500–1,999 €		1.151 (0.468)
3,000–3,999 €		1.247 (0.354)
4,000–4,999 €		0.910 (0.310)
5,000 € or more		0.736 (0.238)
Parties (ref: Greens)		
CDU (Christian Democratic Union)		0.281** (0.093)
CSU (Christian Social Union)		0.126** (0.060)
SPD (Social Democratic Party)		0.663 (0.243)
AfD (Alternative for Germany)		0.016** (0.011)
FDP (Free Democratic Party)		0.162** (0.083)
Die Linke (The Left)		4.115* (1.914)
None of above		0.342** (0.098)
Born in German region (ref: abroad)		0.542 (0.229)
Job competition: (ref: current + direct [regular])		
Current + indirect [unclear future job prospects]		2.141 (0.927)
In future [will be relevant as training finishes]		3.893† (1.918)
Current + immediate[due to unemployment]		1.587 (0.646)

Table 4 (continued)

Fixed Effects (FE) Odds Ratio	Model 1	Model 2
Irrelevant [due to retirement]		0.426 (0.218)
Concerns about economy (ref: no)		0.427* (0.115)
Concerns about own finances (ref: no)		0.512* (0.113)
Cut point 1 (constant)	−0.915 (0.182)	−2.546 (0.686)
Cut point 2 (constant)	2.834 (0.182)	1.704 (0.680)
Cut point 3 (constant)	5.100 (0.198)	4.268 (0.684)
Random Effects (RE) Coefficient	Constant	Constant + random slopes
Var (constant)	9.433** (0.739)	10.888** (1.112)
Var (job offer in Germany)		4.108** (0.768)
Cov (constant, job offer in Germany)		−2.371** (0.618)
3. Information criteria: AIC|BIC	AIC: 9,857| BIC: 9,960	AIC: 9,611| BIC: 9,934
4. R^2: McKelvey-Zavoina (fixed|fixed + random)	0.339| 0.743	0.577| 0.797
5. ICC of Random Intercept (Level 2)	0.634 (0.015)	

Obs.= 4,708 answers for 1,177 persons (4 observations each); † = $p < 0.050$; †† = $p < 0.010$; * = $p < 0.005$; ** = $p < 0.001$

Odds ratios for constant and random slopes; robust standard errors in parentheses; secular AIC/BIC decrease and R^2 increase

targeted consideration of distorting characteristics of the respondents in our calculations improves the results of the estimates. However, even if we can reduce distortions, only the differences of a person depending on the characteristics of the vignettes should be taken into account when interpreting the results. Second, the field phase of our online survey was in November and December 2020, i.e. at a time when there was still great uncertainty about how the COVID-19 pandemic would develop. Moreover, unemployment was also rising in Germany due to the negative economic impact of the pandemic. As we have no counterfactual or follow-up data, we cannot exactly say to what extent these factors influenced our empirical results. This concerns, for example, respondents' expectations about economic development in the medium term and stereotypes or prejudices about certain migrant groups (e.g. from Asia) that might have been especially salient during this period. Third, our vignettes do not include some dimensions that might also be theoretically and/or empirically relevant for the acceptance of skilled workers from outside the EU, such as gender, age, religion or specific regions or countries of origin. This is because we have relied particularly on characteristics that are highly relevant for the labour market and that are also relevant in legal regulations. Further research might focus on other combinations of migrants' characteristics.

From the vantage point of further development of the much-discussed immigration laws, these findings may suggest, in our opinion, that respondents would appreciate more easily applicable immigration procedures, which are less precisely based on the specific German criteria for the admission of professional qualifications. Therefore, they could also be open to point systems that allow criteria to be weighed against each other (e.g. Anglosphere countries such as the United Kingdom, New Zealand, Canada and Australia as well as Austria). Our results offer initial indications of which individual characteristics of migrants are likely to be met with acceptance by residents. These could serve as the basis of a point system for immigration. Other specific criteria, such as e.g. age, religion and citizenship of immigrants, might also be important and could be further explored. However, at least some of these may exhibit profound legal barriers to implementation due to discrimination, which is why we chose not to include further aspects.

Table 5 Marginal effects ordered logit model: Vig/Vig + Personal characteristics

Average Marginal Effects (AME)	Model 1: Vignette dimensions only	Model 2: Vignette dimensions + Respondents' characteristics
1. Vignette features		
Avg. German skills (ref: almost no German skills)	−0.047** (0.005)	−0.047** (0.004)
	−0.033** (0.003)	−0.032** (0.003)
	0.014** (0.002)	0.013** (0.002)
	0.066** (0.006)	0.067** (0.006)
Job offer in Germany (ref: no job offer)	−0.123** (0.006)	−0.128** (0.008)
	−0.092** (0.005)	−0.085** (0.008)
	0.047** (0.004)	0.040** (0.008)
	0.169** (0.009)	0.174** (0.010)
Job experience (ref: one year)		
Several years	−0.032** (0.006)	−0.032** (0.006)
	−0.018** (0.004)	−0.018**(0.004)
	0.011** (0.002)	0.010** (0.004)
	0.039** (0.007)	0.040**(0.007)
Several years in IT	−0.071** (0.006)	−0.070** (0.006)
	−0.051** (0.005)	−0.048** (0.005)
	0.021** (0.003)	0.019** (0.003)
	0.101** (0.008)	0.100** (0.008)
Certification with (ref: no degree)		
Vocational degree	−0.054** 0.009)	−0.055** (0.009)
	−0.024** (0.004)	−0.023** (0.004)
	0.021** (0.004)	0.020** (0.003)
	0.057** (0.009)	0.058** (0.009)
Vocational degree with certification	−0.108** (0.009)	−0.110** (0.009)
	−0.066** (0.006)	−0.063** (0.006)
	0.037** (0.004)	0.034** (0.004)
	0.137** (0.011)	0.139** (0.010)
University degree	−0.080** (0.009)	−0.081** (0.009)
	−0.042** (0.005)	−0.039** (0.005)
	0.030** (0.004)	0.028** (0.004)
	0.092** (0.009)	0.093** (0.009)
University degree with certification	−0.114** (0.009)	−0.117** (0.009)
	−0.072** (0.006)	−0.070** (0.006)
	0.038** (0.004)	0.035** (0.004)
	0.148** (0.011)	0.152** (0.011)
Recognition (ref: applies all Ger. rules)		
As relevant to German job position	−0.010 (0.007)	−0.008 (0.007)
	−0.007 (0.005)	−0.006 (0.005)
	0.003 (0.002)	0.002 (0.002)
	0.014 (0.010)	0.011 (0.010)
Criteria of home country	0.001 (0.007)	0.001 (0.007)
	0.000 (0.005)	0.000 (0.005)
	−0.000 (0.002)	−0.000 (0.002)
	−0.001 (0.010)	−0.001 (0.001)
Via German test methods in profession	0.007 (0.007)	0.009 (0.006)
	0.005 (0.004)	0.006 (0.004)
	−0.002 (0.002)	−0.002 (0.002)
	−0.010 (0.009)	−0.012 (0.009)
Is partial	0.004 (0.007)	0.005 (0.007)
	0.003 (0.005)	0.003 (0.004)
	−0.001 (0.002)	−0.001 (0.002)

Table 5 (continued)

Average Marginal Effects (AME)	Model 1: Vignette dimensions only	Model 2: Vignette dimensions + Respondents' characteristics
	−0.005 (0.009)	−0.006 (0.009)
2. Personal characteristics	No	Yes
Male (ref: female)		−0.003 (0.011)
		−0.002 (0.008)
		0.001 (0.003)
		0.004 (0.016)
Age group (ref: ages 50-64)		
Ages 18–34		0.031* (0.015)
		−0.022* (0.011)
		0.008* (0.004)
		0.044* (0.022)
Ages 35–49		−0.002 (0.014)
		−0.002 (0.009)
		0.001 (0.004)
		0.003 (0.019)
Ages 65–78		−0.049 (0.032)
		−0.039 (0.032)
		0.011* (0.005)
		0.077 (0.060)
Region (ref: German eastern states)		
German southern states		0.002 (0.018)
		0.001 (0.011)
		−0.001 (0.005)
		−0.003 (0.023)
German northern states		−0.015 (0.017)
		−0.010 (0.011)
		0.004 (0.005)
		0.021 (0.023)
German city states		−0.044* (0.022)
		−0.034†† (0.018)
		0.010†† (0.005)
		0.068†† (0.035)
Schooling (ref: general/technical A-level)		
School without A-level		0.021 (0.018)
		0.014 (0.010)
		−0.006 (0.005)
		−0.029 (0.022)
Other types, including from abroad		−0.045†† (0.024)
		−0.040 (0.026)
		0.008** (0.002)
		0.077 (0.044)
Occupation/Uni (ref: vocation/foreman/technician)		
None		−0.051†† (0.029)
		−0.041 (0.028)
		0.011†† (0.004)
		0.081 (0.053)
University		−0.017 (0.015)
		−0.011 (0.010)
		0.005 (0.004)
		0.024 (0.020)
Other types, including from abroad		−0.054 (0.043)

Table 5 (continued)

Average Marginal Effects (AME)	Model 1: Vignette dimensions only	Model 2: Vignette dimensions + Respondents' characteristics
		−0.044 (0.045)
		0.012* (0.005)
		0.087 (0.084)
Net household income/month (ref: 2,000–3,000 €)		
Less than 1,000 €		−0.008 (0.028)
		−0.006 (0.026)
		0.002 (0.007)
		0.012 (0.041)
1,000–1,499 €		−0.028 (0.022)
		−0.021 (0.018)
		0.006 (0.005)
		0.042 (0.036)
1,500–1,999 €		−0.008 (0.022)
		−0.005 (0.016)
		0.002 (0.006)
		0.011 (0.032)
3,000–3,999 €		−0.012 (0.016)
		−0.009 (0.011)
		0.003 (0.004)
		0.018 (0.023)
4,000–4,999 €		0.005 (0.020)
		0.003 (0.012)
		−0.002 (0.006)
		−0.007 (0.026)
5,000 € or more		0.018 (0.019)
		0.011 (0.011)
		−0.005 (0.006)
		−0.023 (0.025)
Parties (ref: Green party)		
CDU (Christian Democratic Union)		0.069** (0.019)
		0.053** (0.013)
		−0.020** (0.006)
		−0.103** (0.027)
CSU (Christian Social Union)		0.125** (0.033)
		0.074** (0.013)
		−0.041** (0.013)
		−0.158** (0.032)
SPD (Social Democratic Party)		0.020 (0.018)
		0.019 (0.017)
		−0.004 (0.004)
		−0.035 (0.031)
AfD (Alternative for Germany)		0.299** (0.059)
		0.067** (0.019)
		−0.110** (0.022)
		−0.256** (0.029)
FDP (Free Democratic Party)		0.106** (0.034)
		0.069** (0.015)
		−0.034** (0.013)
		−0.142** (0.036)
Die Linke (The Left)		−0.052** (0.015)
		−0.075** (0.025)

Table 5 (continued)

Average Marginal Effects (AME)	Model 1: Vignette dimensions only	Model 2: Vignette dimensions + Respondents' characteristics
		−0.005 (0.006)
		0.132** (0.044)
None of above		0.057** (0.015)
		0.046** (0.013)
		−0.015** (0.004)
		−0.088** (0.024)
Born in German region (ref: abroad)		0.032 (0.021)
		0.025 (0.019)
		−0.007†† (0.004)
		−0.050 (0.036)
Job competition: (ref: current+direct [regular])		
Current+indirect [unclear future job prospects]		−0.040†† (0.021)
		−0.032 (0.020)
		0.009†† (0.004)
		0.062†† (0.037)
In future [will be relevant as training finishes]		−0.066** (0.020)
		−0.061* (0.025)
		0.012** (0.002)
		0.115** (0.044)
Current+immediate[due to unemployment]		−0.025 (0.021)
		−0.018 (0.017)
		0.007 (0.005)
		0.037 (0.033)
Irrelevant [due to retirement]		0.054 (0.035)
		0.026* (0.013)
		−0.018 (0.013)
		−0.062†† (0.035)
Concerns about economy (ref: no)		0.045** (0.013)
		0.035** (0.012)
		−0.010** (0.003)
		−0.070** (0.023)
Concerns about own finances (ref: no)		0.038** (0.013)
		0.025** (0.008)
		−0.010** (0.004)
		−0.052** (0.017)

Obs.= 4,708 answers for 1,177 persons with 4 observations each; † = $p < 0.050$; †† = $p < 0.010$; * = $p < 0.005$; ** = $p < 0.001$

Marginal effects Model 2 also integrates random intercept and random slopes; robust standard errors in parentheses

Four different decisions per category in both models. The values display percentage points differences to have made the following decisions: 1 st No entry; 2nd Entry, up to excluding 3 years; 3rd Entry from 3 up to 5 years (legal framework); 4th Unlimited stay (includes stays of 5 + years)

Appendix

See Fig. 2, Tables 1, 2, 3, 4 and 5.

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Data availability
As the data underlying our analysis are not completely proprietary, access to the data is restricted. The data we use are administrative data. They contain sensitive information and are subject to confidentiality regulations. Obtaining access to the data through the Research Data Centre of the Institute for Employment Research (IAB) requires a contract with IAB. We will support researchers interested in replicating the results with the required formalities to receive data access.

Declarations

Ethics approval and consent to participate
Participants freely chose to participate in the online study under strict data protection guarantees.

Consent for publication
All participants gave their consent to participate in the online study and were given the option to either consent or deny to merge available administrative data with the study data.

Competing interests
The authors declare that they have no competing interests.

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