

Overeducation among EU and Third-Country Immigrants in Europe: The role of Institutions, Policies and Culture

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Abstract

Faced with the demographic shift to a smaller and older labour force, the recruitment of migrants and their successful integration into the labour force is an essential challenge for all European countries. This article discusses the immigrant-native gap regarding the risk of overeducation for 28 European countries on the basis of the EU-LFS 2021 ad hoc module. Immigrants' higher overeducation risks are interpreted as the result of processes of legal closure as well as statistical and taste-based discrimination. Higher overeducation rates of third country nationals (TCN) in contrast to EU migrants indicate that EU citizenship reduces discrimination and facilitates the recognition of educational certificates – they are skill-preserving devices for EU citizens but not for TCN. The large overeducation rates in particular in Southern Europe can be explained by segmented labour markets with higher unemployment and lower skill requirements increase overeducation risks, in particular for TCN. Moreover, it can be shown that EU citizenship, a higher educational level of the population, and more inclusive labour markets facilitate the occupational integration of immigrants.

Keywords

Overeducation; labour market integration; migration; European Union; third-country nationals; single market.

1. Introduction

In many European countries concerns about an imminent shortage of skilled workers are growing due to demographic shifts towards a smaller and older labour force as well as the digital and ecological transformation of economies (Eurofound 2021). A shortage of skilled workers can not only have a negative impact on firms' ability to innovate and adopt technological developments, but also reduces the average productivity of the overall economy (Brunello and Wruuck 2019). Therefore, the appropriate use of the available skilled labour is paramount in coping with labour shortages. In addition, the recruitment of skilled migrants has become an essential aim of immigration policies among advanced countries to cope with the shortage of skilled labour (Boeri *et al.* 2012).

Against this backdrop, the incidence of overeducation, i.e. the share of employees who have attained an educational qualification that exceeds the typical educational requirements for their current position, is surprisingly high in Europe (Davia *et al.* 2017; McGuinness *et al.* 2018; Verhaest and van der Velden 2013) and varies between 7% in Slovakia and 44% in Spain (Borgna *et al.* 2019). Moreover, immigrants from non-EU and non-European countries seem to be affected in particular by overeducation (Cim *et al.* 2020; Jacobs *et al.* 2021; Kalfa and Piracha 2017; Nieto *et al.* 2015; Sparreboom and Tarvid 2017; Visintin *et al.* 2015). This points to an inefficient utilisation of urgently needed human resources in general and especially in the case of immigrants.

In order to better cope with skill shortages, education mismatches and the non-recognition of skills on a national or EU level, it is essential to understand the driving forces of overeducation among immigrants. A better understanding of the reasons and determinants of overeducation is a crucial prerequisite for facing the recruitment problems of advanced but ageing countries confronted with increasing skill requirements and a structural decline of the available labour force. Against this background, this study raises the question *to what extent institutional, political, and cultural determinants can explain cross-country differences in the incidence of overeducation among immigrants from EU and non-EU countries.*

To address this research question, this study draws on two different strands of literature. First, international comparative studies on the general causes of overeducation show that cross-country differences in the incidence of overeducation are related to various national context factors such as the business cycle, the education system, the oversupply of highly skilled labour (Verhaest and van der Velden 2013), the college wage premium (Croce and Ghignoni 2012), the university enrolment level and the share of migrants (Davia *et al.* 2017), as well as the female employment rate, the share of manufacturing, the share of part-time workers and the overall unemployment rate (McGuinness *et al.* 2018). While these studies point to the importance of national context factors in explaining international differences in overeducation, they do not further distinguish between different groups of employees such as natives and immigrants.

Second, another strand of existing literature has examined the different ways in which natives and immigrants are affected by overeducation. These studies focus mostly on single countries (e.g. Jacobs *et al.* 2021 for Belgium, Nielsen 2011 for Denmark, Lindley 2009 for the UK, Chiswick and Miller 2009 for the US and Kalfa and Piracha 2017 for Spain) and are thus not able to explain cross-country variation in the extent of overeducation among immigrants. Although a few existing studies examine the different ways in which natives and immigrants are affected by overeducation from an international comparative perspective (Griesshaber and Seibel 2015; McGuinness and Byrne 2015; Nieto *et al.* 2015; Prokic-Breuer and McManus 2016; Rossen *et al.* 2019; Sparreboom and Tarvid 2017), they do not explain those differences with country-level characteristics. The only study, to the best of our knowledge, that deals with national institutions and policies shaping the incidence of overeducation among immigrants is Aleksynska and Tritah (2013). In addition to individual level determinants, they examine the role of

labour market institutions and institutional features such as the unemployment level, trade union density, the extent of the shadow economy as well as immigrant-specific policies (eligibility of immigrants to take up specific jobs, the degree of labour market integration; and antidiscrimination policies). We are placing our research in this tradition with a particular focus on the role of the *Community acquis* and the related differences between EU citizens and third-country nationals (TCN).

The aim of this paper is thus to identify determinants of overeducation in 28 European countries with a special focus on the role of the migration background and national labour market structures and institutions. It contributes to the existing literature in three different ways: First, it highlights the crucial role of the *Community acquis*, the common rules, rights and obligations of EU and associated member states. This *acquis* shapes the employment situation of EU migrants in contrast to TCN in a decisive and usually overlooked way and may thus be crucial in explaining the successful labour market integration of migrants. Second, it further distinguishes between different groups of TCN from different parts of the world having either an EU or another foreign citizenship. Third, following the tradition established by Aleksynska and Tritah (2013), we will analyse which institutional, political and cultural characteristics of the respective countries are associated with higher overeducation risks for immigrants.

In the following, we will discuss three theoretical mechanisms explaining the higher incidence of overeducation among immigrants compared to natives and how these mechanisms are in turn moderated by country-specific features (2). After proposing five hypotheses on the level and determinants of overeducation, the method and data used are presented (3). In the fourth section, the overeducation rates of natives and migrants and their determinants are analysed. The fifth section summarises the results and argues that the *Community acquis* has facilitated the migration of skilled European migrants, while most TCN face a much higher overeducation risk.

2. Theoretical perspectives

2.1 Overeducation among immigrants

Mismatches between education and occupation among immigrants may reflect objective barriers in accessing the labour market of another country as for example language barriers, skill gaps or differences between the educational systems of the countries of origin and destination, which may impose a penalty on the recognition of qualifications, education and experiences (Nielsen 2011). For example, nurses with academic training cannot expect that their exam is recognised in Germany at the same level, because German nurses are usually trained in a vocational training system and receive a certificate below the academic level (Schuster *et al.* 2013). Immigrants' human capital might not match with the requirements of the destination country's labour market the more the home and destination country differ (Aleksynska and Tritah 2013; Chiswick and Miller 2009; Kalfa and Piracha 2017). These mismatches and deficits may explain overeducation because immigrants could try to compensate for the lack of country-specific human capital through an educational surplus (Green *et al.* 2007). Individuals can therefore be overqualified in terms of formal education, while their actual skills and competences are quite appropriate for their current jobs (Green and McIntosh 2007). An example of such an imperfect match of education and jobs are labour market entrants who may deliberately accept jobs for which they appear to be overqualified in order to gain more work experience (Cim *et al.* 2020). This explains also why the incidence of overeducation declines with the duration of residence in the host country as immigrants gain more labour market experience, improve their language skills, and tend to adjust to the requirements of the destination country's labour market over time (Aleksynska and Tritah 2013; Jacobs *et al.* 2021; Kalfa and Piracha 2017).

Therefore, immigrants' higher overeducation risks are mainly explained by the *incomplete transferability of human capital* which reflects the structural and also cultural differences between the countries of origin and destination (Nieto *et al.* 2015). However, this incomplete transferability is not only the result of objective barriers, but it is the result of societal dynamics, regulations, and choices. In particular, three different mechanisms contribute to the social construction of such an incomplete transferability: institutional, in particular legal closure, statistical discrimination, and taste-based discrimination.

First, citizenship rights are both at the national as well as the EU level instruments of *legal closure* that strengthen the positions of natives and EU citizens in comparison to migrants (Brubaker 1992). Immigrants from non-EU countries have to overcome the related barriers in order to successfully accessing to the labour market of an EU member state and getting their education recognised. Millions of irregular migrant workers in the EU have only partly met this challenge (Fox-Ruhs and Ruhs 2022). Their illegal status does not prevent their stay in the EU or their employment, but it does likely impede the recognition of possible educational certificates. Other institutional barriers are a lengthy recognition of foreign qualifications, a limited offer of language courses or a difficult and burdensome legalisation of residency and employment rights. Therefore, overeducation may also be the result of regulations and barriers which privilege native and EU citizens.

Second, limited information on the actual skills and capabilities of immigrants is another reason for the incomplete transferability of human capital. Signalling theory (Arrow 1973; Spence 1973) suggests that risk-averse employers are exposed to imperfect information about the applicant's actual productivity and use educational credentials as a proxy. Employers' limited information on the actual competencies, capabilities and experience of migrant workers compared to natives leads to a risk-averse and cost-reducing strategy in firms, because essential indicators such as foreign school certificates, diplomas or work experiences cannot be interpreted and evaluated as easily as national ones. Due to uncertainties about the 'real value' of foreign certificates and higher risks of mismatches it may be rational for employers not to hire newly arrived immigrants or only below their formal qualification (Chiswick and Miller 2009). This is an example of *statistical discrimination*, because such a risk-based assessment (even without negative prejudices) affects all members of a specific group who are deemed to have competencies below those of equally educated natives.

Third, as opposed to statistical discrimination which is based on imperfect information and risk-averse but rational employers, prejudice or dislikes can also have negative results in hiring immigrant workers. Employers may have a 'taste' for discrimination and thus rely on negative stereotypes and only offer jobs to migrants below their formal qualifications, regardless of their actual skills and productivity (Lindley 2009) – even if that would mean hiring a more unsuitable candidate. In this case, overeducation is the result of *taste-based discrimination* (Becker 2010).

In sum, overeducation may be the outcome of institutional closure and of statistical and taste-based discrimination. These three mechanisms may be incorporated in various legal, political, institutional and cultural features at the European and national level, as suggested by the international comparative literature (Davia *et al.* 2017; McGuinness *et al.* 2018; Verhaest and van der Velden 2013). In the following, we will discuss five sets of country-specific features that may influence the transferability of human capital and thus contribute to higher overeducation risks of migrants.

2.2 Institutional, political and cultural drivers of immigrants' overeducation risks

EU citizenship

Citizenship is a particular form of institutional, in particular legal closure (Brubaker 1992: ch. 1). While TCN often face quite similar challenges as EU migrants when entering foreign labour markets (language

barriers, new rules and practices, a new sociocultural context), there is one crucial difference: the *Community acquis*. Due to the common regulatory structure of EU countries, the informational and legal advantages of EU citizens in contrast to TCN are substantial. EU rules regulate and facilitate the recognition of diplomas and certificates, thus reducing the risks and uncertainties of migration decisions for EU citizens. The free movement of people, i.e. the right to live and work in another EU country, is a core principle of the EU. It allows EU citizens to search for a job, to stay in another EU member state and to benefit from its social protection. In addition, it entitles EU citizens to equal treatment, it regulates working conditions, and it facilitates the transfer of social security benefits to their countries of origin. The single market thus facilitates the frictionless mobility and migration of European citizens allowing a careful preparation of a stay in a foreign country (e.g. by learning its language instead of dealing with the vagaries of the residence permit). These entitlements also apply to citizens of other European states which either belong to the European Economic Area (Iceland, Liechtenstein and Norway) or have concluded bilateral agreements with the EU (UK, Switzerland). The EU also facilitates the cross-border transferability of competences. Citizens of the EU, but also of Norway, Switzerland, Iceland and Liechtenstein have the right that their qualifications are recognised and that they “have access to the same profession and pursue it in another Member State with the same rights as nationals” (European Directive 2005/36/EC; Michel 2018). The recognition of educational and occupational certificates is thus facilitated by the single market and its rules, which is much more difficult for TCN – despite the European Directive 2013/55/EU which states that “(t)hird-country nationals may also benefit from equal treatment with regard to recognition of diplomas, certificates and other professional qualifications”. Therefore, EU citizenship partially opens up the legal closure of domestic labour markets, facilitating the transferability of foreign human capital at least for EU migrants. Against this background, *we assume that after controlling for compositional differences the risks of overeducation among EU migrants will be significantly lower than those of TCN* (H1).

Labour market regulations

Labour market institutions may also influence the level of overeducation due to higher risks of statistical discrimination. Quintini (2011), for example, suggests that highly regulated labour markets may make it difficult for firms to cope with uncertainty and imperfect information due to greater difficulties firing mismatched workers or in adjusting wage levels in response to a mismatch. In order to reduce their risks, companies therefore may react to the uncertainties of foreign work experience and educational certificates by assigning TCN only to jobs below their formal education. This could be particularly true in view of strict employment protection legislation (EPL). In line with signalling theory, the risks of hiring an immigrant are greater in countries with stricter EPL because their qualifications provide weaker signals of potential productivity. Thus, the costs of a potential mismatch will increase for the employers. Therefore, risk-averse employers in countries with strict EPL will reduce potential dismissal costs by assigning foreign applicants to jobs below their formal qualification. Additionally, overqualified immigrants will stay in these jobs because the chances of finding another and better matching job after acquiring job experience in the destination country is lower than in countries with more flexible and fluid labour markets. Less strict EPL thus may allow for more occupational mobility, increasing the likelihood of finding a better matching job by time. *We therefore assume that countries with strict EPL will be characterised by higher overeducation risks for TCN compared to natives and EU migrants* (H2a).

Other labour market regulations may also affect the overeducation risks of different migrant groups. Countries with higher collective bargaining coverage are characterised by lower levels of wage inequality and more egalitarian employment relations (Grimshaw *et al.* 2017: 11). This may contribute to lower overeducation rates in particular for vulnerable groups as TCN (Di Stasio *et al.* 2016). Thus, a higher level of collective protection due to a high collective bargaining coverage rate may reduce the overeducation risks could be expected. However, also the opposite could be true. Risk-averse employers

in countries with a higher bargaining coverage rate will reduce their employment risks by assigning migrants to less demanding jobs, because they have less trust in the signals educational certificates from other countries imply (which would indicate statistical discrimination). We therefore assume that *countries with a higher bargaining coverage rate will be characterised by higher overeducation risks for TCN compared to natives and EU migrants (H2b).*

Immigrant-specific policies

In addition to the more general labour market institutions, immigrant-specific policies may also be crucial for the transferability of human capital. In particular, rules for immediate access to the labour market, eligibility to take up specific jobs, the recognition of academic qualifications, access to education and vocational training or antidiscrimination practices are expected to have a direct impact on immigrants' overeducation rate as shown by Aleksynska and Tritah (2013). Such immigrant-specific policies can improve both the transferability of human capital as well as the information available to both employers and migrants. Therefore, it can be expected that a stronger role of immigrant-specific policies will reduce the incidence of overeducation among migrants. This is what Aleksynska and Tritah (2013: 242) found for labour market policies which aim at a better inclusion of migrants in the labour markets. However, in the case of anti-discrimination policies and more inclusive eligibility practices, these countries "seem to attract educated immigrants from a wider ability distribution, which leads to the overall enhancement of overeducation" (Aleksynska and Tritah 2013: 242). Therefore, both intended effects of inclusive policies and counterintuitive effects due to a higher attractiveness of host countries shape the overeducation risks of migrants. On the basis of our theoretical framework (and partially in contradiction to the findings of Aleksynska and Tritah (2013)), *we expect that policies aiming at a higher labour market mobility of migrants reduce the legal closure of labour markets thus facilitating the recognition of educational certificates and the access of TCN to European labour markets, while antidiscrimination policies will reduce the incidence of taste-based discrimination and thus overeducation risks of migrants (H3).*

Attitudes towards immigrants

The higher incidence of overeducation among immigrants may also be the result of taste-based discrimination. Opinions and attitudes towards immigrants in one country may be a good predictor for potential discrimination at the workplace, as they influence the behaviour of natives. In line with signalling theory, employers have to rely on expectations to assess the potential achievements of newly recruited employees. These expectations are hard to formulate, in particular on the basis of foreign certificates or limited work experience. In case of negative or even hostile attitudes towards immigrants, these attitudes may have a negative impact on the applicant's employment opportunities as employment decisions are (at least partly) made on the basis of supposed/alleged group characteristics resulting in greater difficulty in finding an adequate job (Naveed and Wang 2021). Therefore, we expect that *in countries with more negative or hostile attitudes towards immigrants the incidence of overeducation among migrants compared to natives will be higher, especially for those from outside the EU (H4).*

Employment structures

Previous research on overeducation has strongly emphasised the role of the supply and demand sides of labour markets, in particular the overall unemployment rate and the education system (McGuinness *et al.* 2018). Existing studies have pointed out that a higher unemployment rate will increase job market competition and thus the pressure on the most vulnerable groups who are more easily excluded from adequate positions. If unemployment is high, the number of applicants per open job position increases and thus the role of information uncertainty. Applicants with weak signals are thus forced to reduce their demands until employers are prepared to hire someone with 'noisy signals'. As information uncertainty

is higher for TCN, we assume that *a higher unemployment rate is related to higher overeducation risks for immigrants in general and in particular for TCN (H5a)*.

Second, the educational level of the population is an essential factor shaping employment opportunities. It could have been expected that better educated migrants are particularly welcome in countries with a lower level of education, because employers have a strong interest in utilising their skills. However, the converse is also possible. Countries with a lower educational level might have chosen a low-road strategy which relies less on advanced technologies and services and more on less educated and lower skilled employees engaged in agriculture and personal services. In Europe, Southern Europe in particular has chosen such a low-skill, demand-led growth model (Hall 2018: 12) focusing on agriculture, craft trades, tourism, trade and other services (AUTHOR1, ch. 4). A result of such a low-road strategy is, for example, that in Italy and Greece the employment rates for recent graduates aged 20-34 were only 65% respective 66% in 2022, in contrast to 82% in the EU-27 (Eurostat 2023). This indicates a high pressure on graduates to accept low-skilled jobs, which will be even higher for TCN who are not protected by EU rules and who are particularly inclined to accept less demanding jobs. Thus, it can be hypothesised that *in countries with a lower average level of education the risk of overeducation will be higher for TCN compared to natives and EU migrants (H5b)*.

These five sets of hypotheses will be tested in the following.

3. Methods and Data

Data

The overeducation risks of natives and migrants with a European and a non-European background in 28 European countries will be analysed on the basis of the EU Labour Force Survey (EU-LFS) 2021 ad hoc module (Eurostat 2022), which focuses on the labour market situation of migrants and their immediate descendants. EU-LFS is the only available up-to-date data source for international comparative and figure which is important for the study of migration and overeducation is not available in the yearly datasets. The 2021 ad-hoc module extends the regular data by information on self-assessed language skills, the recognition of migrants' educational certificates, and the country where the highest level of education was acquired are available, which is the major reason for choosing this data. The following analysis includes the current 27 EU-member states (without Malta, where essential context data are not available) as well as Norway and Switzerland. The sample is restricted to individuals aged 20–64 years who are either employed or unemployed and have at least an upper secondary educational level. The final sample consists of 339,429 persons (390,962 when low educated are included; see **Error! Reference source not found.**). A

Variables

The dependent variable in the following analysis is *overeducation*, which indicates whether the educational level of the labour force aged 20–64 years corresponds to the educational level of employees with a comparable job. Various objective and subjective approaches for the conceptualisation and measurement of overeducation have been proposed in the literature (Capsada-Munsech 2019; Sparreboom and Tarvid 2017). In the following, we have chosen an objective measure focusing on the correspondence between education and occupation. This choice excludes in particular subjective assessments of overeducation which is not available in the EU-LFS. Our operationalisation follows McGuinness *et al.* (2018: 997), who calculate the discrepancy between educational achievement and occupational status on the basis of the International Standard Classification of Education (ISCED) level of schooling and the occupational modal level in each country in each two-digit occupational ISCO-08

group (International Standard Classification of Occupations). We have distinguished six ISCED levels (2, 3, 4, 5B and 5A & 6). Overeducation has been calculated as having an ISCED level above the maximum mode in the respective ISCO group (cf. **Error! Reference source not found.**).

Our main independent variable is migration status (**Error! Reference source not found.**), which has been calculated on the basis of the country of birth and citizenship in an aggregated and a disaggregated version. *Natives* are persons born in the survey country, *EU mobiles* are persons living in one and born in another EU country. Non-EU migrants or *third-country nationals (TCN)* are born in a non-EU country and have a non-EU citizenship. *Integrated TCN* are EU citizens born in a non-EU country. According to their country of birth, TCN will be differentiated into five subgroups for a disaggregated migration status variable: "Other European migrants", "North America, Oceania", "Africa", "Asia", and "Latin America". Some of the "other European migrants" may have similar rights and opportunities as EU citizens.

To account for compositional differences between migrant groups in each country, we control for age groups, gender, education, degree of urbanisation, the duration of stay in the country of residence, the number of persons working at the local unit, the sector of economic activity (NACE), language skills and the recognition of formal qualifications obtained abroad (see **Error! Reference source not found.** for more details).

On the national level, our explanatory variables are the context-specific factors discussed in the previous section. These variables are provided either by Eurostat, the OECD or the ILO (cf. **Error! Reference source not found.**). These indicators refer to the *characteristics of the national labour force* (unemployment rate, rates of low-educated persons), to *labour market institutions* (EPL strictness, collective bargaining coverage rate) (ILO 2015; OECD and Visser 2023), and to *migrant integration policies* which are measured by the MIPEX (Solano and Huddleston 2021). The latter indicators cover a broad range of policies aiming at a better integration of migrants, i.e. labour market mobility and antidiscrimination policies. These indices are based on expert evaluations of various subdimensions. In the case of migrants' *labour market mobility*, we use the aggregate index (in contrast to Aleksynska and Tritah 2013 who rely on two subdimensions, immigrants' eligibility to take up specific jobs and labour market integration). In addition, we use an aggregate index for *antidiscrimination policies* (the subdimensions of each composite index can be found in Table 1). The final indicator, which measures *attitudes towards immigrants*, is an index derived by a principal component analysis (PCA) of five variables from the European Social Survey (ESS) (Naveed and Wang 2021). Higher values of the index indicate more open and friendly attitudes towards immigrants, while lower values indicate negative or even hostile attitudes towards immigrants (see Table 1 for details). Missing country data for 2021 was interpolated from previous waves via nearest-neighbour interpolation.

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Analytic approach

In order to estimate the association between migrant status and overeducation as well as the moderating role of national context factors, we use linear probability models (LPM) with country fixed effects. LPM have some advantages over nonlinear models because they allow a more straightforward interpretation of the coefficients and a meaningful comparison across models, which is more problematic in nonlinear models as results might be biased by systematic differences in residuals. Moreover, the statistical significance of interaction terms (which are at the core of this analysis) as well as their general direction can be somewhat problematic in nonlinear models (Ai and Norton 2003).

To account for the hierarchically nested structure of our data (individuals nested within countries), we apply multilevel estimation techniques. However, due to the rather small number of macro-level units ($N < 30$) and the non-random sample of countries, the application of conventional multilevel regression models can be somewhat problematic (Bryan and Jenkins 2016). Against this backdrop, we apply country fixed effect regression models with cross-level interaction effects (Möhring 2012, 2015):

$$Y_{ij} = \gamma_0 + \beta_1 x_{1ij} + \dots + \beta_k x_{kij} + \gamma_l z_j x_{1ij} + \alpha_1 u_{j1} + \dots + \alpha_{N-1} u_{jN-1} + e_{ij}$$

where Y_{ij} is the linear probability that individual i in country j is overeducated, γ_0 is the intercept over all countries, $\beta_k x_{kij}$ is the coefficient of variable k of observation i in country j , $\gamma_l z_j x_{1ij}$ is the the cross-level interaction of the country-level variable z_j and the individual-level variable of interest x_{1ij} , $\alpha_{N-1} u_{jN-1}$ are the fixed effects for $N - 1$ countries, and e_{ij} is the residual variance for observation i within country j . In contrast to conventional multilevel modelling, the fixed effects approach does not include the main effect of the country-specific variable because including country dummies in the model already controls for all between-country heterogeneity. However, by interacting the country-specific variable with the individual-level variable of interest (i.e. migrant status), we can illustrate the relationship between country-specific variables and the migrant specific overeducation risks in a descriptive way. As LPM are known to suffer from heteroskedasticity and to account for the nested structure of our data, we apply clustered standard errors.

A replication package that includes the country-level data as well as Stata code necessary for data preparation and analysis can be found here DOI 10.17605/OSF.IO/K3SGY.

4. Results

In presenting the results, we will focus on the challenge for migrants to find a job which corresponds to their formal education. After presenting some descriptive evidence, the moderating role of institutions, politics, and culture on the overeducation risks among migrants is examined. In this way, we want to highlight how legal closure, statistical and taste-based discrimination vary between contexts and thus shape cross-country differences in education mismatches among immigrants and natives.

4.1 Descriptive evidence

According to Table 2, migrants are overrepresented in low-skilled jobs. While about 43% of the native labour force in the 28 European countries work in complex technical or problem-solving tasks, this is only true for 37% of EU migrants, 35% of the integrated TCN and just 23% of other TCN. However, this is only partly associated to lower education: 37% of natives, 38% of EU migrants and 36% of integrated TCN have a higher education but only 29% of other TCN (in particular from North America and Australasia). Even EU and integrated TCN who have on average an education level comparable to that of natives are employed over-proportionally in low-skilled jobs (simple & routines tasks). The odds of native employees having a high-skilled job is 2.5 times higher than the chances of TCN, while their chances of having a high education are only 1.5 times higher. The fact that the educational certificates of migrants are not fully transferable to the labour markets of their host countries is a serious disadvantage for all migrant groups. This is also shown by the overeducation rates: 23% of the TCN in the labour force have a higher formal education than the average employees in the respective occupation, while only 16% of the native employees were overeducated in 2021.

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Regarding cross-country differences, **Error! Reference source not found.** shows the unadjusted overeducation rates for 28 European countries and aggregated for five European employment regimes. The overeducation rates are particularly high in Southern Europe (28.7% for TCN, 33.4% for EU migrants, 34.3% for integrated TCN and 22.2% for the whole labour force). The overeducation rates are especially high in Portugal (25%), Spain (24.7%), Greece (22.3%) and Italy (19.4%), but also in the Baltic countries. They are particularly low in all the Scandinavian (15%) and Eastern and Central European countries (11.3%). On average, the unadjusted overeducation rates for TCN are nearly identical to those for integrated TCN and EU mobiles (23%). With the exception of six countries (Slovenia, Switzerland, Hungary, Croatia France, and Cyprus), the overeducation rates for natives are lower than those for migrants. The biggest gaps between the three migrant groups and natives can be observed in Southern Europe and Ireland. The relatively low overeducation rates in Scandinavia for natives (14.1%) contrast with large overeducation rates for EU migrants (20.7%) and both types of TCN (19.2% and 21.6%). These figures highlight the particularly challenging situation in Southern Europe. However, they do not explain the higher incidence of overeducation among migrants in such countries. Therefore, in the following we want to shed some light on the relationship between immigrant-specific overeducation risks and various country-specific features.

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4.2 Differences between migrant groups

In the subsequent analyses, low-educated persons are excluded, because they cannot be overeducated by definition. In **Error! Reference source not found.**, LPM are presented which control for various aspects of the socio-economic and migration-related characteristics of the individuals. Model 1 only includes the migration status and the country dummies and shows a significantly higher overeducation risk for all three migrant groups in contrast to natives. Moreover, the coefficients for EU migrants (.065) and TCN (.139) differ significantly from each other, thus TCN are much more affected by overeducation than EU migrants. Model 2 controls for socio-economic and job-related differences of the labour force (level of education, gender, age group, urbanisation, duration of the stay in the country of residence, sector of economic activity, job tenure and firm size). In comparison to the previous model, the coefficients of the three migrant groups remain relatively stable. Therefore, higher overeducation risks for migrants compared to natives as well as the differences between the three groups of migrants cannot be explained by compositional differences.

The situation changes completely in model 3 and 4 in which language skills respective the recognition of (foreign) qualifications are taken into account. In both cases, the coefficients for the three migrant groups clearly decline (for TCN from .139 to .075 respective .099 and for EU migrants from .065 to .037 respective .045). That means that language skills and the recognition of qualifications have a strong and crucial impact on the occupational position of migrants. This becomes even clearer in model 5 where all control variables are included, leading to a further decline of the coefficients for all migrant groups. In sum, after considering socio-economic, job-related, and language-related differences as well as the recognition of foreign qualification, the overeducation risk relative to natives is 2 percentage points higher for EU migrants and 6 respective 5 percentage points higher for TCN and integrated TCN while it remains only significant for TCN, thus supporting H1. However, it is still unclear at this point whether these differences are primarily caused by the country of birth or citizenship.

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Therefore, in **Error! Reference source not found.** we disentangle the two facets of the migrant status. The lack of a native or EU citizenship indicates restrictions on the freedom of movement in addition to a more difficult recognition of educational certificates and professional competences. A foreign country of birth often implies that a person has to learn another language and get used to different employment conditions. It might also be the base for taste-based discrimination on the grounds of ethnicity. In the case of citizenship, no significant relationship exists towards the overeducation risks of migrants as long as country of birth is already controlled for. The overeducation risks of EU and third country citizens do not differ significantly from the risk of natives as long as country of birth is controlled for. This shows that the correlation between overeducation and a foreign citizenship can be completely explained by these variables, which may indicate that language skills and the recognition of foreign qualifications are a crucial prerequisite for citizenship in many countries. In contrast, the significant relationship between foreign country of birth and overeducation only disappears after controlling for language skills. These findings indicate that only the combination of a foreign country of birth and a third country citizenship leads to significant higher overeducation risks compared to natives, once controlling for language skills and the recognition of foreign qualifications.

4.3 Country-specific drivers of overeducation

In the next step, the relationships between national context factors and risks of overeducation are examined. While controlling for differences in the composition of the national labour forces, the seven models in **Error! Reference source not found.** illustrate the associations between the migrant-specific overeducation risks and labour market institutions (a and b), migration specific policies (c and d), attitudes towards migrants (e) as well as labour market structures (f and g).

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H2a and H2b presume that countries with higher levels of labour market regulation (indicated by strict EPL and high collective bargaining coverage) are characterised by higher overeducation risks among migrants, in particular for TCN. Indeed, panel a) shows that in countries with stricter EPL (values above 2) the overeducation risks of TCN are significantly higher compared to natives. This is also true for the collective bargaining coverage rate depicted in panel b): Rates of collective bargaining coverage of 80% and higher are associated with higher overeducation risks for TCN. Therefore, countries with strict EPL and high collective bargaining coverage seem to facilitate statistical discrimination towards migrants in general and especially in case of TCN by rising the implicit costs of a potential mismatch. This is in particular true for TCN from Africa and Latin America (see Figure A3 in the online appendix). In sum, the findings shown in panel a and b support the assumption of H2a and H2b, that more regulated labour markets tend to go along with higher overeducation risks for TCN. This does not apply to EU migrants, as their overeducation risks hardly differ from those of natives once language and qualifications are controlled for. The next two models shown in **Error! Reference source not found.** examine the relation

between two features of national migration policies and overeducation. The results regarding policies aiming at a higher labour market mobility of migrants (panel c) contradicts our expectations (H3): higher openness of national labour markets (values above 50) is positively correlated with the overeducation risks for migrants, in particular for TCN. A possible explanation for this finding is that migrants prefer to migrate into countries where labour mobility policies facilitates their labour market integration in the first place, which comes along with a higher general chance of being employed inadequately. This is particular true for TCN who do not have the same rights as EU migrants. This argument is similar to the argument of Aleksynska and Tritah (2013: 242) who explain the positive relationship between labour mobility policies and overeducation by a higher attractiveness for educated migrants from a wider ability distribution. However, Aleksynska and Tritah (2013) observe a higher attractiveness for migrants not only in the case of better eligibility practices, but also in the case of antidiscrimination policies. Regarding the latter, our results show (Figure 2d) that the overeducation risks for TCN is only significantly higher compared to natives in countries with values between 70 and 80 and becomes insignificant again for values of 90 and above. This might be a hint that the overeducation risks of TCN decline with a stronger role of anti-discrimination policies indicating a lower impact of statistical as well as taste-based discrimination. Anti-discrimination policies thus play an essential role for the reduction of overeducation risks especially among integrated and other TCN. The divergence from the result of Aleksynska and Tritah (2013) might results from a much smaller sample size and a focus on country-pair effects. In sum, H3 can only be partially retained in the case of anti-discrimination policies.

Regarding attitudes towards migrants, **Error! Reference source not found.e** shows that more open and friendly attitudes towards migrants (positive values) are associated with higher overeducation risks among TCN compared to natives (at least for values 1 and 2). This finding clearly contradicts the expectations of H4. However, this once again supports the previously formulated assumption that in countries with unfriendly or even hostile attitudes towards migrants, migrants will not even enter the labour market or refrain from migrating into these countries and thus reducing the general probability of an education-occupation mismatch.

Finally, the general labour market structure matters. Both the national unemployment rate and the share of low-educated persons are positively correlated with higher overeducation risks. H5a and H5b assume that countries with higher unemployment rates and a lower average educational level are characterised by higher overeducation rates. The rationale behind this assumption is that tense labour market conditions increase job competition and thus may facilitate statistical discrimination towards migrants, while a low average level of education reduces the demand for qualified labour from abroad. Panel f) of **Error! Reference source not found.** shows the overeducation risks for migrants as a function of the national unemployment rate and confirms that the overeducation gap between natives and all types of migrants increases with the unemployment rate. **Error! Reference source not found.g** shows that higher degrees of low educated people (above 20%) are associated with higher risks of overeducation for migrants compared to natives. In countries with a lower educational level (in particular Portugal, Spain and Italy), even high educated migrants have a lower chance of getting an adequate job. The economic specialisation of these countries on low-skilled activities (retail trade, craft, restaurants, hotels and other tourism-related activities, agriculture) seems to slow down the demand for (foreign) high-skilled labour. They are locked into an economic structure based on low qualifications, low-skill requirements and less knowledge-intensive products. Therefore, the Southern European growth model, which is characterised by a specialisation on low educated employees and less demanding jobs, limits the demand for higher educated people.

In sum, the greater impact of institutions and policies on TCN compared to EU migrants indicate that EU regulations facilitate the integration of EU migrants in the labour markets of host countries, in particular by facilitating their mobility, the recognition of qualifications and even foreign language skills (H1). The Community *acquis* thus has a two-fold impact on migrant's labour market integration: on the

one hand, it opens up national labour market towards EU migrants and reduces unequal treatment compared to natives. On the other hand, however, it strengthens the legal closure of European labour markets towards TCN. The fact that higher unemployment rates and a lower educational level of the population are positively correlated with overeducation among TCN (H5a&b) also explains their higher overeducation rates in Southern Europe. Stricter EPL and higher collective bargaining coverage are also correlated with higher overeducation risks among TCN (H2a&b). Labour market policies facilitating the mobility of migrants (H3) as well as positive attitudes towards migrants (H4) contribute to higher overeducation risks of migrants. Immigrant-friendly policies and attitudes might thus attract immigrants to move to these countries and accede more immigrant-friendly labour markets, increasing the job competition between natives and migrants but also the statistical discrimination in particular of TCN. As expected, antidiscrimination policies seem to reduce statistical or taste-based discrimination. Overall, TCN seem to be particularly affected by all country-specific factors examined in this analysis.

4.4 Robustness and sensitivity checks

In order to check for the robustness of our findings, we additionally tested for sample selection bias, endogeneity bias and for the heterogeneity of the TCN group as well as the use of a different method.

Selection into employment – Since immigrants, in particular TCN, are usually less likely to be employed compared to natives and thus less likely to be included in our sample of employed persons, a bias due to selection into employment may occur. Therefore, we re-estimated all models with Heckman's two-step estimator for selection models (results can be found in Tables A3-A5 and Figure A1 in the online appendix). First, we estimated a probit regression model for the probability of being employed containing the following explanatory variables: country of birth, citizenship, education, sex, age, degree of urbanisation, language skills, recognition of foreign qualifications, duration of stay in country of residence and country dummies as well as the number of children and the number of elderly people (above 65 years old) in the household as an instrument that affects selection but not the outcome and thus excluded from the outcome regression. Second, we generated the inverse Mills ratio using these predicted individual probabilities and used it as an additional explanatory variable in all re-estimated models to correct for selection into employment. The results of the selection models are very similar to the findings presented above. In general, the main differences are that the coefficients for TCN are a bit larger. However, the size and direction of the country-level moderators remain the same. The coefficients of the inverse Mills ratios are only significant for those models without the full set of control variables. This indicates an absence of sample selection bias once controlled for socio-demographic and job specific differences – given that the selection model is good and exclusion restrictions are sufficient.

Endogeneity bias – By controlling for job specific characteristics such as sector of economic activity and firm size, which are in itself potential outcomes of the migration variable, a post-treatment variables bias might occur. Therefore, we re-estimated all models without controlling for sector of economic activity and firm size in order to check for a potential post-treatment variable bias (see Tables A6-A8 and Figure A2 in the online appendix). The results show only small differences compared to the models including job-specific characteristics. In particular, the (adjusted) coefficient for TCN increased from 0.06 to 0.089 (see M5 in Table 3 and Table A6) which might be the result of a greater role of third-country citizenship in these models (the coefficient increased from 0.014 to 0.031, see Model 11 in Table 4 and Table A7). Regarding the country-level moderators, the impact on TCN is slightly more pronounced in these models, in particular regarding EPL, collective bargaining coverage, and unemployment rates. And differences between TCN and natives become significant at lower rates of the country-specific variables, e.g. in countries with EPL of 2 and above or labour mobility index of 50 and above.

Heterogeneity of TCN – So far, TCN were treated as a more or less homogenous group of migrants from non-EU countries. However, with regard to the variety of countries of origin, we tested for the possibility of heterogeneous effects for each of these groups by using a disaggregated measure for TCN, allowing a further differentiation between TCN from North America & Oceania, Africa, Asia, and Latin America (see Tables A9-A10 and Figures A3-A4 in the online appendix). The results show that immigrants from Latin America and Africa, after controlling for compositional differences, are particularly affected by overeducation (11 respective 14 percentage points higher risks than natives), while immigrants from North America and Oceania have a significantly lower overeducation risk – even compared to natives (12 points lower). This is also reflected in the influence of country-specific institutions and policies. These have a significantly greater influence on the overeducation risks of Africans and Latin Americans compared to natives and other migrant groups, especially from North America. This applies in particular to anti-discrimination policies, EPL and attitudes towards migrants.

Hierarchical Linear Models – as a further robustness check, we have additionally estimated conventional multilevel models, i.e. random intercept/random slope models with cross-level interaction effects (see Table A11 and Figure A5 in the online appendix for more specification details) in order to check the reliability of our fixed effects models. Despite slightly larger confidence intervals, the results are mostly identical to those from the main analysis. The biggest difference is the fact that in these models not only the TCN show significant differences compared to natives but also the integrated TCN, especially in case of collective bargaining coverage, labour mobility policies, anti-discrimination policies, and attitudes towards migrants.

5. Discussion and conclusion

Faced with the demographic shift to a smaller and older labour force, the recruitment of migrants and their integration into the labour force is an essential challenge for all European countries. An essential prerequisite for successfully mastering this challenge is utilising the migrants' educational capital. Against this backdrop, this study investigated the overeducation risks for migrants on the basis of the EU-LFS 2021 ad hoc module for 28 European countries. First, we distinguished three theoretical mechanisms explaining the generally higher overeducation rates of migrants in contrast to natives: legal closure as well as statistical and taste-based discrimination. Moreover, we have assumed that migrants within European countries are by far no homogeneous group but differ primarily with regard to one central dimension: citizenship.

The results of various LPM with country fixed effects showed that even when language skills and the recognition of foreign qualifications is considered, the overeducation risk is 2 percentage points higher for EU migrants, 5.4 points higher for integrated TCN, and 6 points higher for TCN compared to natives (**Error! Reference source not found.**, model 5). Thus, migrants are often included in the labour market only below their formal educational level. A major result of this study is the crucial role of the European *Community acquis*. The risks of persons with a non-European background are much higher than the risks of EU migrants. This finding indicates that the single market and its essential pillar, the free movement of citizens, as well as the EU-wide recognition of educational titles in addition to better language competences facilitate the integration in adequate jobs – even if native citizens are still in a better situation due to their cultural and linguistic competences. The single market thus facilitates the “brain gain” of European countries by improving the recognition of educational certificates in the labour market (for a similar result cf. Kosyakova and Brücker 2022). This reduces the occupational risks of migration decisions for EU citizens in contrast to non-EU migrants.

Moreover, we investigated the relationship between institutional, political and cultural features and the overeducation risks of migrants. Our results support the assumption that countries with patterns of labour

market segmentation, which are incorporated in labour laws and collective bargaining structures, seem to contribute to the exclusion of TCN from adequate jobs by fostering statistical discrimination. Positive attitudes towards migrants and policies facilitating the labour mobility of migrants are correlated with higher overeducation risks for TCN. This might indicate that migrants enter the labour market to a lesser extent or hesitate to migrate into countries with hostile attitudes and a lack of integrative labour market policies, which of course reduces the general likelihood of being employed below their educational qualification. Anti-discrimination policies, however, seem to be able to reduce the overeducation risks among immigrants, especially from third countries.

Finally, with regard to cross-country patterns of overeducation, the findings refer to the high overeducation risks for migrants especially in Southern Europe. This reflects the relatively low educational level of the domestic population. Mediterranean countries are characterised by “a dualisation of the economy and labour markets” (AUTHOR1 2022, p. 61) between a protected employment sector and atypical and partly seasonal activities in tourism, craft trades, agriculture, the retail trade or other personal services. Even if educated migrants are available, they cannot be employed according to their qualifications. The Mediterranean growth model seems to be characterised by mutual reinforcing dynamics of overeducation, high unemployment and a low average educational level.

This study has some limitations. First of all, the data set used contains only limited information on the return intentions of migrants. Another serious limitation is the choice of an objective indicator for overeducation. The complementary use of both objective and subjective indicators of overeducation would provide additional and valuable information on educational mismatches (Capsada-Munsech 2019: 286). It would also be helpful to consider more closely the particular migration patterns and policies of sending and receiving countries as well as their differences. Last but not least, it has to be stressed again that the appreciation of educational certificates is only one very specific facet of the labour market integration of migrants, because it only concerns persons who have already successfully moved to a new country and have gained access to its labour market. At least for the latter selection effect we were able to control and correct in this study. However, there is still room for a potential selection bias regarding the decision to immigrate into specific countries. Finally, it should be stressed once again that no causal relationships were shown in this study, but rather associations between patterns of overeducation among migrants and country-specific characteristics.

With regard to the recruitment of educated migrants and their integration into the labour force, it can be concluded that an EU citizenship as well as countries with more inclusive labour market structures, anti-discrimination policies, a higher average education level in the population, and lower unemployment rates are associated with a better occupational integration of migrants into adequate jobs. Given the European interest in the recruitment of skilled migrants, the regulatory differences between natives, EU citizens and TCN should therefore be minimised, the inclusiveness of labour markets increased, and anti-discrimination policies be intensified in order to facilitate the labour market integration of skilled migrants, in particular from third countries.

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Variable	Operationalisation	Data source
Micro-level		
Overeducation	Discrepancy between educational achievement (ISCED 11) and occupational status (ISCO 08) (-1: "undereducated" (omitted in the multivariate analyses); 0: "fit" (ref.); 1: "overeducated").	EU-LFS, own calculation on the basis of isco08_2d and hatlev1d.
Migration status	<i>Aggregated version:</i> 0: Natives (born in the country of residence). 1: EU (born in another EU country); 2: TCN (born in a non-EU country and having its citizenship); 3: Integrated TCN (born in a non-EU country and having an EU citizenship); <i>Disaggregated version,</i> TCN are is divided: "Other European", "North America, Oceania", "Africa", "Asia", and "Latin America".	EU-LFS, calculated on the basis of citizenship and countryb.
Skill level	Occupational status (reclassified): 4: Problem-solving, decision-making, creativity; 3: Complex technical and practical tasks; 2: Operating machinery and electronic equipment; driving vehicles; maintenance and repair; 1: Simple and routine physical or manual tasks.	EU-LFS, isco08_2d; ILO (2012).
Gender	1: male (ref.), 2: female.	EU-LFS, sex.
Age group	1: 15–24 years, 2: 25–54 years (ref.), 3: 55 years and older.	EU-LFS, agecat.
Urbanisation	Degree of urbanisation, 1: Cities (ref.), 2: Towns and suburbs, 3: Rural areas.	EU-LFS, degurba.
Stay in country of residence	Duration of stay in country of residence, 0: Born in this country (ref.), 1: 10 years and more, 2: 5–9 years, 3: less than 5 years.	EU-LFS, duration.
Sector of economic activity (NACE)	Economic sector: 1: Agriculture, forestry and fishing, 2: Mining and quarrying, 3: Manufacturing (ref.), 4: Electricity, gas, steam and air conditioning supply, 5: Water supply, sewerage, waste management, 6: Construction, 7: Wholesale and retail trade, repair, 8: Transportation and storage, 9: Accommodation and food services, 10: Information and communication, 11: Financial and insurance activities, 12: Real estate activities, 13: Professional, scientific and technical activities, 14: Administrative and support service activities, 15: Public administration and defence, compulsory social security, 16: Education, 17: Human health and social work, 18: Arts, entertainment and recreation, 19: Other services, 20: Households, extraterritorial organisations.	EU-LFS, nace2_1d.
Tenure	Duration in years a person is working in main job	EU-LFS, ystartwk
Firm size	Number of persons working at the local unit, 1: Less than 10 (ref.), 2: 10–250, 3: 250 or more.	EU-LFS, sizefirm.
Language skills	Current skills in main host country language: 0: Mother tongue (ref.), 1: Advanced, 2: Intermediate, 3: Beginner/no skills.	EU-LFS, ahm2021_langhost
Recognition of qualifications	Recognition of formal qualifications obtained abroad, 0: Qualifications obtained in country (ref.), 1: Partially or fully recognised, 2: Not (yet) recognised.	EU-LFS, ahm2021_estqual
Macro-level		
Unemployment rate	Unemployed (as % of the labour force aged 15–74, 2021).	Eurostat, table [lfst_r_lfu3rt].
Educational attainment	Persons with high, medium and low education levels (in % of the population aged 25–64, 2021).	Eurostat, table [lfst_r_lfe2eedu]; [edat_lfse_04].
Strictness EPL	Strictness of employment protection legislation (EPL) (0–6: very strict). Data for 2019.	OECD Employment Protection Database (version 3); ILO (2015).
Collective bargaining coverage	Adjusted collective bargaining (or union) coverage rate. Data for 2020.	OECD and Visser (2023), variable adjcov.
Labour Mobility	Equal rights and opportunities of foreign residents with the right to work to access jobs and improve their skills (part of the Migrant Integration Policy Index). This index is a weighted average of the following nine items (which are measured evaluated on a scale from 0 to 100) is calculated: evaluations of their immediate access to the labour market, access to the public sector, access to self-employment, access to public employment services, access to education and vocational training and study grants, the recognition of academic qualifications, economic integration measures of TCN, economic integration measures of youth and women and access to social security and assistance.	Solano and Huddleston (2021).

Anti-discrimination	Effective legal protection from racial, ethnic, religious, and nationality discrimination (part of the Migrant Integration Policy Index). This index is based on four sub-indices for laws coverings direct and indirect discrimination, harassment, and/or instruction; the application of these laws to employment and vocational training, to education, to social protection and/or to the supply of public goods and services; the access for victims to juridical civil, criminal and administrative procedures; the existence of specialised equality bodies which have been established with a mandate to combat discrimination on the grounds of race and ethnicity, religion and belief, and/or nationality.	Solano and Huddleston (2021).
Attitudes towards migrants	Index on the basis of the following five attitudes towards immigrants: allow many/few immigrants of the same race/ethnic group as majority population; allow many/few immigrants of different race/ethnic group from majority population; allow many/few immigrants from poorer countries outside Europe; country's cultural life undermined or enriched by immigrants; immigrants make country a worse or better place to live.	ESS (waves 1–10); Naveed and Wang (2021).

Table 1: The variables used, their operationalisation and sources

	Native	EU	TCN	Other Euro- peans	North America, Oceania	Africa	Asia	Latin America	Inte- grated TCN	Total
Education										
Low education	13.1	20.9	39.3	34.0	9.3	50.8	42.9	31.9	22.7	15.0
Medium education	49.7	41.4	31.9	37.2	16.7	27.7	26.7	37.3	41.5	48.2
High education	37.2	37.8	28.8	28.8	74.0	21.6	30.4	30.7	35.8	36.8
Skill level										
Simple & routine physical or manual tasks	6.9	13.9	26.2	22.1	3.6	35.0	23.6	29.6	14.1	8.4
Operating machinery & electronic equipment; driving vehicles; maintenance	50.6	48.8	51.3	54.3	23.6	49.6	50.7	51.3	50.7	50.6
Complex technical & practical tasks	18.1	14.3	8.1	9.1	14.8	6.7	8.8	5.6	15.2	17.4
Problem-solving, decision- making, creativity	24.4	23.0	14.5	14.4	58.0	8.7	16.9	13.5	20.0	23.7
Fit between education and occupation										
Undereducated	18.0	22.1	26.5	26.9	13.4	30.6	29.4	16.4	23.8	18.8
Fit	66.0	55.4	50.7	51.1	74.1	50.5	50.5	48.2	53.9	64.3
Overeducated	16.0	22.6	22.8	22.0	12.5	18.9	20.2	35.5	22.3	16.9
Total (No.)	346,259	17,161	12,448	5,008	223	2,308	3,410	1,502	15,091	390,962

Table 2: Education, skills and overeducation of the native and migrant labour force in 28 European countries.

Note: Weighted column percentages; persons aged 20–64 years with all types of education who are either employed or unemployed. *Source:* EU-LFS 2021 ad hoc module.

	M1 No controls	M2 Socio- economic	M3 Language	M4 Recognition	M5 Full
Migrant group (ref.: natives)					
EU	0.065*** (0.004)	0.072** (0.020)	0.037 (0.027)	0.045** (0.013)	0.020 (0.022)
TCN	0.139*** (0.006)	0.129*** (0.028)	0.075* (0.035)	0.099*** (0.016)	0.060* (0.027)
Integrated TCN	0.076*** (0.004)	0.094*** (0.019)	0.059 (0.033)	0.080*** (0.017)	0.054 (0.030)
<i>N</i>	339,429	339,429	339,429	339,429	339,429
<i>R</i> ²	0.042	0.144	0.145	0.145	0.145

Table 3: Relative overeducation risks by groups of migrants

Note: Clustered standard errors in parentheses. Every model includes country fixed effects. M1: No control variables; M2: Controlled for socio-demographics and job specific characteristics; M3: Controlled for socio-demographics and job specific characteristics and language skills; M4: Controlled for socio-demographics and job specific characteristics and recognition of qualifications; M5: Controlled for socio-demographics, job specific characteristics, language skills and recognition of qualifications. Legend: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; EU: EU migrants, TCN: Third-Country Nationals, Integrated TCN: Third-Country Nationals with an EU citizenship. *Source:* EU-LFS 2021 ad hoc module.

	M6 Country of birth	M7 Country of birth and citizenship	M8 Socio-economic	M9 Language	M10 Recognition	M11 Full
Country of birth (ref.: native)						
EU	0.065** (0.021)	0.041*** (0.010)	0.055** (0.016)	0.031 (0.025)	0.043** (0.014)	0.024 (0.023)
TCN	0.101*** (0.026)	0.077*** (0.018)	0.091*** (0.019)	0.057 (0.033)	0.078*** (0.017)	0.051 (0.030)
Citizenship (ref.: native)						
EU		0.037 (0.023)	0.025 (0.020)	0.012 (0.015)	0.003 (0.013)	-0.005 (0.011)
TCN		0.058 (0.029)	0.042 (0.023)	0.025 (0.020)	0.025 (0.018)	0.014 (0.016)
<i>N</i>	339,429	339,429	339,429	339,429	339,429	339,429
<i>R</i> ²	0.042	0.042	0.144	0.145	0.145	0.145

Table 4: Relative overeducation risks by country of birth and citizenship

Note: Clustered standard errors in parentheses. Every model includes country fixed effects. M6 and M7: No control variables; M8: Controlled for socio-demographics and job specific characteristics; M9 Controlled for socio-demographics and job specific characteristics (see section 3) and language skills; M10 Controlled for socio-demographics, job specific characteristics and recognition of qualifications; M11 Controlled for socio-demographics, job specific characteristics, language skills and recognition of qualifications. Legend: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; EU: EU migrants, TCN: Third-Country Nationals. *Source:* EU-LFS 2021 ad hoc module.



