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Descriptive Finding

Educational selectivity of native and foreign-born internal migrants in Europe

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Educational selectivity of native and foreign-born internal migrants in Europe

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Abstract

BACKGROUND

It is well-established that internal migration is selective, particularly with respect to age and educational attainment. However, the interplay between education and immigrants' origin remains largely unknown. Thus, it is unclear how the educational selectivity of internal migration varies by nativity status.

OBJECTIVE

We establish the educational selectivity of internal migrants in 12 European countries, paying attention to variation between native and foreign-born populations born in and outside the European Union.

METHOD

We use microdata from the European Union Labour Force Survey (2015–2019) and run a series of multivariate binomial logistic regressions to estimate the likelihood of changing NUTS-2 region of residence by educational attainment.

RESULTS

Our results confirm a positive association between tertiary education and internal migration, except for in Slovenia, Greece, and the Czech Republic. On average, completing tertiary education increases the likelihood of migrating internally by close to 3 times, compared with less than 1.5 times for secondary education. In half the countries,

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secondary education displays either a negative or no association with internal migration. We find evidence of a strong positive selectivity of tertiary-educated foreign-born populations, who are on average twice as likely to migrate internally than the native-born with comparable education, except in Hungary, where immigrants are less likely to migrate internally.

CONCLUSION

By redistributing skills within a country, immigrants are integral to the effective functioning of labour markets.

CONTRIBUTION

This study provides new evidence on the educational selectivity of internal migration across Europe and shows that the gradient is typically stronger among the foreign-born.

1. Introduction

While a large body of work has documented variation in the intensity of internal migration across Europe (Bell et al. 2015; Bernard 2017; Rees et al. 2017; Rowe et al. 2019), comparatively less attention has been paid to differences in the educational selectivity of internal migration. Global evidence suggests a nearly universal positive association between education and migration both between (Feliciano 2005; Docquier and Marfouk 2006; Docquier and Rapoport 2012) and within countries (Machin, Salvanes, and Pelkonen 2012; Corcoran and Faggian 2017; Bernard and Bell 2018). The well-established positive educational selectivity of migrants (Ravenstein 1885; Sjaastad 1962; Lee 1966) has been explained by the role of education in mitigating the costs of and barriers to moving, while increasing returns (Sjaastad 1962; Greenwood 2014). However, new evidence suggests important variation in the degree of educational selectivity of internal migrants between and within world regions (Bernard and Bell 2018). In addition, in some countries a negative selection of internal migration has been found (Ginsburg et al. 2016). Thus, the strength of the association between internal migration and education may be country-specific, but comparative evidence across European countries is limited.

Cross-national variation in the degree of selectivity of internal migration may also be due to differences between population groups. Foreign-born individuals have higher internal migration intensities than the native-born in the first decade post-arrival (Bell and Hugo 2000), despite important variations by country of birth (Catney and Finney 2012; Gutiérrez-Portilla, Maza, and Hierro 2018; Raymer and Baffour 2018) and visa type (Zorlu and Mulder 2008; Laukova, Bernard, and Sigler 2022). Within Europe, immigrants born in the European Union and European Free Trade Association

(EU+EFTA) countries are on average less mobile internally than those from other countries (Recaño and De Miguel 2012). The higher propensity to move of foreign-born populations has been explained by their younger age profile (Reher and Silvestre 2009), coupled, in some countries, with higher rates of unemployment, job instability (Nogle 1997; Reher and Silvestre 2009), and housing insecurity (Azevedo, López-Colás, and Módenes 2016; Gerolimeto and Magrini 2018). However, the greater internal mobility among highly skilled immigrants seems to stem from housing and labour market adjustments (Laukova et al. 2022).

While international migrants are typically positively selected in terms of education compared to the population at origin (Docquier and Marfouk 2006; Docquier and Rapoport 2012), less is known about the role of education in shaping their internal migration once in destination countries. Answering this question is particularly important in Europe where the share of foreign-born population has been trending up (Castles, Haas, and Miller 2014), coupled with the fact that internal migration plays an important role in mitigating regional population ageing (Lee 2011) and in the efficient functioning of the labour market by bringing workers and skills to where they are needed (Van Ham, Mulder, and Hooimeijer 2001).

To address this gap, we first establish the educational selectivity of internal migrants between NUTS-2 regions for 12 European countries. We then compare the education selectivity of native and foreign-born populations before distinguishing between immigrants from the EU+EFTA and those born outside the EU+EFTA. We seek to answer the following questions: (1) Does the positive association between educational attainment and the probability of migrating internally hold for all European countries? (2) Does the strength of the relationship between internal migration and education differ between the foreign-born and the native-born populations? (3) Does the level of educational selection vary between EU+EFTA- and non-EU+EFTA-born immigrants?

2. Data and methods

We use microdata from the European Union Labour Force Survey (EU-LFS), provided by Eurostat, and combine annual data for the period 2015–2019 to increase the sample size. While the primary purpose of the EU-LFS is to study labour market outcomes, it collects information on internal migration for 20 countries. We excluded 8 countries⁵

⁵ 20 countries collect information on the region of residence 1 year ago: France, Finland, Slovakia, Croatia, Lithuania, Bulgaria, Romania, Belgium, Czech Republic, Germany, Greece, Hungary, Italy, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom. We excluded France, Finland, Slovakia, Croatia, Lithuania, Bulgaria, Romania, and Poland because there were many missing values in the variable previous region of residence (e.g., 63% in France).

because of the large number of missing values for previous region of residence. Our final dataset comprises 12 countries with 6.1 million individual observations representing more than 171 million people from three Central and Eastern European countries (Czech Republic, Hungary, and Slovenia), four in Southern Europe (Italy, Spain, Portugal, and Greece), four in Western Europe (Germany, United Kingdom, Belgium, and Switzerland), and Sweden in Northern Europe.

We measure internal migration by comparing the current region of residence with that of one year ago at the NUTS-2 level, except for Germany and the United Kingdom where migration is collected at the NUTS-1 level. In both countries the area size of NUTS-1 regions is smaller than in other European states, and the number of units is higher, suggesting that they are broadly comparable to NUTS-2 regions (see Eurostat 2021). We define internal migration as a binary variable: non-migrant and migrant. We restrict the analysis to individuals aged 25 to 64 to ensure that respondents are of working age and have completed education. Educational attainment is classified by Eurostat into 3 levels: less than secondary education, secondary, and tertiary. We use this classification in the first step of the results (Model 1). We then recode the original variable into less than tertiary education and tertiary education for the next two steps (Models 2 and 3), based on the finding from Model 1 that secondary education completion plays a limited role in the probability of migrating internally.

To establish the educational selectivity of internal migration, we estimate a series of multivariate binomial logistic regression models for each country separately, using three different models. In Model 1 we regress migration against education, with less than secondary education as the reference category, while controlling for sex, age, marital status, place of birth (native or foreign-born), labour force status, survey year, and degree of urbanisation measured at the Local Administrative Units (LAU) of residence, which broadly corresponds to cities, suburbs-towns, and rural areas at the municipal levels. In Model 2 we add an interaction term between education and place of birth, distinguishing between natives and foreign-born, with the native-born with less than tertiary education as the reference category. In Model 3 we interact education and place of birth distinguishing between natives, EU+EFTA-born, and non-EU+EFTA-born, using the same reference category as for Model 2.

3. Results

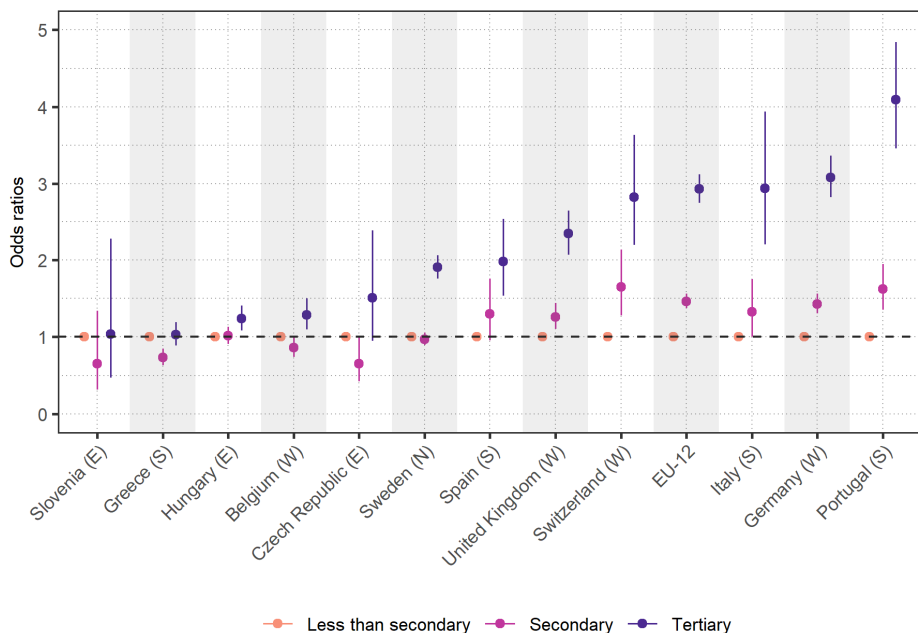
Overall, we find a positive association between tertiary education and internal migration. Across the 12 European countries (EU-12), tertiary education increases the odds of migrating internally by close to 3 times compared to individuals with less than secondary education (Figure 1). All countries except Slovenia, Greece, and the Czech Republic,

where confidence intervals are large, report a positive association between internal migration and tertiary education.

Unsurprisingly, secondary education has a lower impact. Across the EU-12, individuals with secondary education are 1.46 times more likely to migrate internally than those who have not completed secondary education. Greece and the Czech Republic report a negative association, while large confidence intervals in Hungary, Slovenia, Belgium, Sweden, and Spain suggest no clear association between secondary education and internal migration.

Portugal, Germany, Italy, and Switzerland exhibit the greatest odds ratios (ORs) for tertiary education. Secondary education increases the likelihood of migrating by only 1.32 to 1.65 times in these countries compared with 2.82 to 4.09 for tertiary education. Collectively, these results suggest that tertiary education is an important determinant of internal migration across Europe, while secondary education completion is not. For this reason, education is classified as tertiary education or less in the remainder of the study.

Figure 1: Odds ratios of education on internal migration by country (Model 1)



Note: In model 1, internal migration is regressed for each country, using less than secondary education as the reference category; it includes control variables; results are reported with a 95% confidence interval and are sorted in ascending order according to odds ratios for tertiary education.

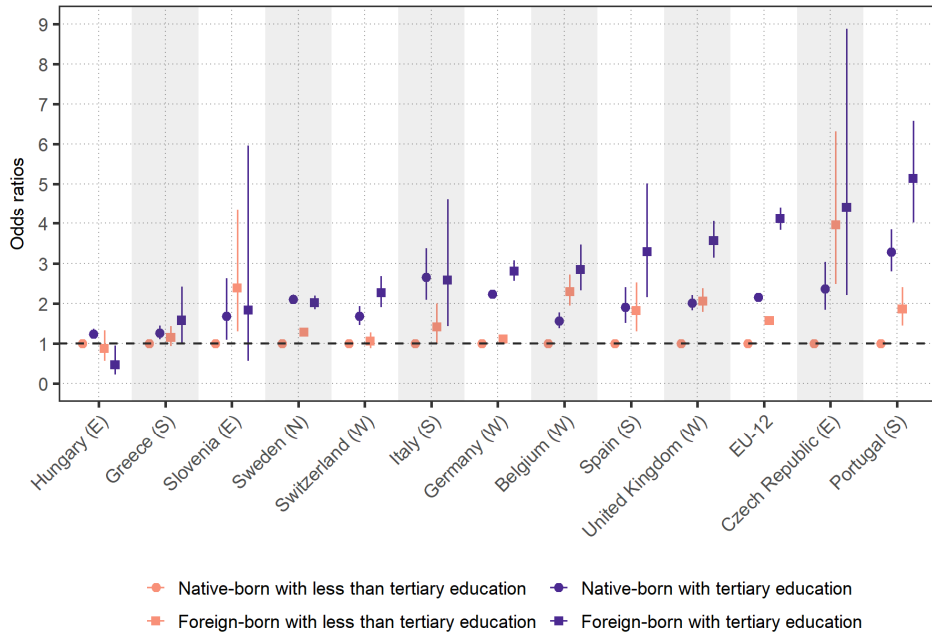
Source: Compiled by the authors using data from the European Union Labour Force Survey (Eurostat), 2015–2019

We now examine whether the relationship between education and internal migration varies between native and foreign-born populations, using the native-born with less than tertiary education as the reference category. Figure 2 confirms that foreign-born populations are generally more likely to move than the native-born regardless of their educational attainment, and they are positively selected. Across the EU-12, the foreign-born with less than tertiary education are 1.72 times more likely to migrate than the native-born with a comparable level of education, while the foreign-born with tertiary education are 4.1 times more likely to migrate, which is nearly twice as high as the native-born with tertiary education (OR = 2.1).

Tertiary-educated immigrants are the most mobile group in all countries, except in Greece and Slovenia, where there is no association, and Hungary, which displays a negative selection for tertiary-educated immigrants but a marginally positive selection for the native-born. This result may point to possible discrimination in the labour market. Only in Sweden and Italy do the foreign-born with tertiary education show similar ORs to the native-born with the same level of educational attainment.

Collectively, these results suggest that, in most countries, tertiary-educated immigrants are more mobile than the native-born with the same level of education and are strongly involved in the internal migration system, which highlights their contribution to the effective functioning of the labour market.

Figure 2: Odds ratios of interaction terms between education and place of birth on internal migration (Model 2)



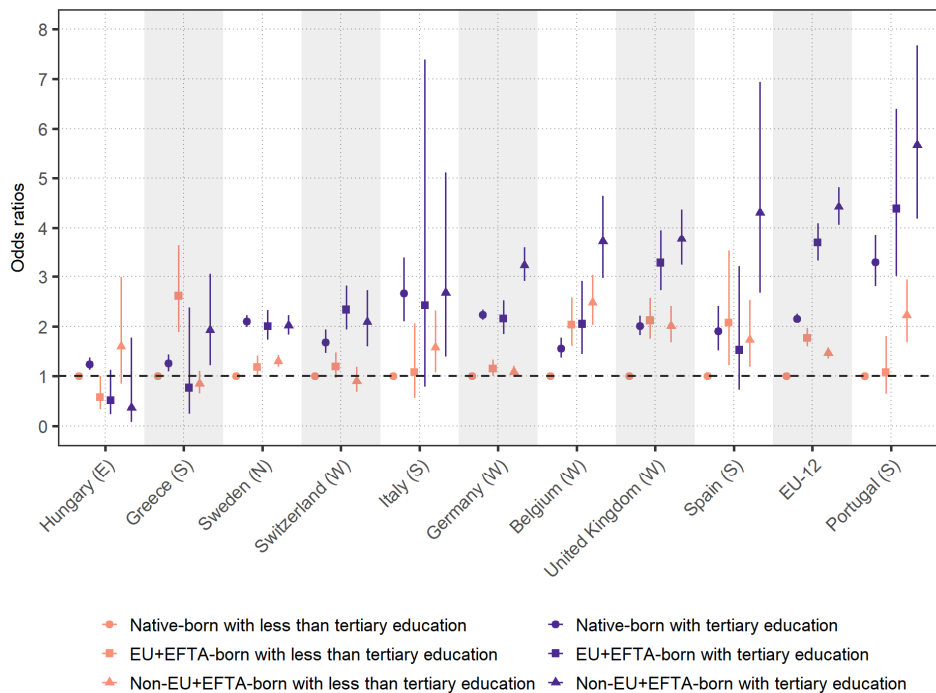
Note: In model 2, internal migration is regressed for each country separately interacting education and place of birth, using native-born with less than secondary education as the reference category; it includes control variables; results are reported with a 95% confidence interval and are sorted in ascending order according to odds ratios for tertiary education among the foreign-born population. Source: Compiled by the authors using data from the European Union Labour Force Survey (Eurostat).

We next explore the educational selectivity of internal migrants, distinguishing between individuals from EU+ EFTA countries and non-EU+EFTA countries, using the native-born with less than tertiary education as the reference category (Figure 3). Across the EU-12 countries both immigrant populations with tertiary education show the highest likelihood of migrating internally, especially those from non-EU+EFTA countries. The non-EU+EFTA-born and the EU+EFTA-born with tertiary education are 4.5 times and 3.8 times more likely to move, respectively, than the native-born with less than tertiary education, while the natives with tertiary education are only 2.1 times more likely to migrate.

Country-level results suggest that the foreign-born of both origins are positively selected by education in most countries. However, we cannot confirm differences between EU+EFTA and non-EU+EFTA, as confidence intervals overlap, except in

Germany and Belgium where the non-EU+EFTA-born with tertiary education show the highest likelihood of migrating internally.

Figure 3: Odds ratios of interaction terms between education and place of birth: natives, EU+EFTA- and non-EU+EFTA-born (Model 3)



Note: Model 3 is regressed for each country interacting education and place of birth, using native-born with less than secondary education as the reference category; it includes control variables; results are reported with a 95% confidence interval and are sorted in ascending order according to odds ratios for non-EU+EFTA-born with tertiary education. Slovenia and the Czech Republic were excluded because their low proportion of foreign-born combined with low levels of internal migration does not permit a robust analysis by immigrants' region of origin.

Source: Compiled by the authors using data from the European Union Labour Force Survey (Eurostat).

4. Discussion and conclusion

Our analysis shows that the positive educational selectivity of internal migrants is a common pattern in Europe, despite some variation by country. Tertiary education has a strong effect on the likelihood of migrating internally, while the impact of secondary

education is positive but much lower in six countries, negative in two, and does not appear to play a role in the remaining four countries. Tertiary education plays an important role in the likelihood of migrating in Southern and Western European countries, especially in Portugal, Germany, Switzerland, and Italy, while confidence intervals are usually large in Central and Eastern European countries.

Our results also reveal that the higher propensity to migrate among the foreign-born is an empirical regularity, irrespective of educational level and region of birth. More importantly, tertiary-educated immigrants are the most mobile group in all countries but Hungary, Sweden, and Italy. This is an important finding that complements the literature on the educational selectivity of international migrants (Feliciano 2005; Docquier and Marfouk 2006; Docquier and Rapoport 2012) by showing that the foreign-born are also positively selected in terms of education when migrating within destination countries, despite cross-national variation in the strength of the relationship. However, we find negative selection among the foreign-born with tertiary education in Hungary, which suggests possible discrimination in the labour market and warrants further research.

These cross-national differences suggest that the effect of education on immigrants' internal migration may be shaped by contextual factors, possibly the socio-economic profile of immigrants in each country, labour market dynamics, and the interaction between both factors, which are likely to shape the economic integration of immigrants. Thus, there is scope to explore the role of country-specific structural factors in the educational selectivity of internal migration. When a large sample of European countries becomes available, this can be achieved through multi-level modelling.

Retrospective surveys such as the Survey of Health, Ageing in Retirement in Europe (SHARE) may allow such an endeavour. It collects comparable internal migration for all 27 European Union countries, although it focuses on older populations aged 50 and over. As Hugo (1975: 25) once wrote, "conducting comparative migration research is ultimately the art of the possible". While progress in data collection has undoubtedly been made since then, our results highlight the enduring challenges of comparing migration processes between countries.

Yet the empirical regularities we uncovered and the fact that tertiary-educated immigrants are on average twice as likely to migrate internally as the native-born with similar education reinforces the need to understand the functional linkages between internal and international migration and whether they are complementary or act as substitutes for one another. Recent evidence suggests that both processes are at play, depending on local circumstances (King and Skeldon 2010; Bernard and Perales 2021). Thus, if we are to make headway, evidence needs to be extended to a broader range of countries, particularly within Europe, in order to explicitly consider how the internal migration of immigrants is functionally connected to other migration flows.

Finally, we should consider that sub-national variation in the educational selectivity of internal migrants is likely to depend on the local context. It is well known that internal migrants moving to global cities are more selected by education than those moving away (Florida 2002; González-Leonardo, López-Gay, and Esteve 2022; López-Gay, Andújar-Llosa, and Salvati 2020). Among the latter, some case studies indicate that low-educated immigrants arriving in major urban centres are redistributed through internal migration, while highly educated immigrants tend to leave peripheral regions through internal migration (Rowe, Corcoran, and Bell 2017; González-Leonardo 2020). This suggests a future line of research to analyse the educational selectivity of internal migrants at the subnational level.

Corrections:

On March 30, 2023, minor text changes were made at the authors' request in the abstract on page 1033 and in the title of Figure 1 on page 1037.

References

- Azevedo, A.B, López-Colás, J., and Módenes, J.M. (2016). Home ownership in Southern European countries: Similarities and differences. *Portuguese Journal of Social Science* 15(2): 275–298. doi:10.1386/pjss.15.2.275_1.
- Bell, M. and Hugo, G. (2000). *Internal migration in Australia: 1991–1996 overview and the overseas-born*. Canberra: Department of Immigration and Multicultural Affairs. <https://hdl.handle.net/2440/37115>.
- Bell, M., Charles-Edwards, E., Ueffing, P., Stillwell, J., Kupiszewski, M., and Kupiszewska, D. (2015). Internal migration and development: Comparing migration intensities around the world. *Population and Development Review* 41(1): 33–58. doi:10.1111/j.1728-4457.2015.00025.x.
- Bernard, A. (2017). Levels and patterns of internal migration in Europe: A cohort perspective. *Population Studies* 71(3): 293–311. doi:10.1080/00324728.2017.1360932.
- Bernard, A. and Bell, M. (2018). Educational selectivity of internal migrants. *Demographic Research* 39(29): 835–854. doi:10.4054/demres.2018.39.29.
- Bernard, A. and Perales, F. (2021). Linking internal and international migration in 13 European countries: Complementarity or substitution? *Journal of Ethnic and Migration Studies* 48(3): 655–675. doi:10.1080/1369183X.2020.1868983.
- Castles, S., De Haas, H., and Miller, M.J. (2014). *The age of migration. International population movements in the modern world*. New York: Palgrave Macmillan. doi:10.1007/978-0-230-36639-8.
- Catney, G. and Finney, N. (2012). *Minority internal migration in Europe*. London: Routledge. doi:10.4324/9781315595528.
- Corcoran, J. and Faggian, A. (2017). *Graduate migration and regional development*. Cheltenham: Edward Elgar Publishing. doi:10.4337/9781784712167.
- Docquier, F. and Marfouk, A. (2006). International migration by educational attainment (1990–2000). In: Schiff, M. and Özden, C. (eds.). *International migration, remittances, and the brain drain*. Washington: The International Bank of Reconstruction and Development / World Bank: 151–199. doi:10.1596/978-0-8213-6372-0.
- Docquier, F. and Rapoport, H. (2012). Globalization, brain drain, and development. *Journal of Economic Literature* 50(3): 681–730. doi:10.1257/jel.50.3.681.

- Eurostat (2021). NUTS 2021. European Commission-Eurostat. <https://ec.europa.eu/eurostat/web/nuts/nuts-maps>.
- Feliciano, C. (2005). Educational selectivity in US immigration: How do immigrants compare to those left behind? *Demography* 42(1): 131–152. doi:10.1353/dem.2005.0001.
- Florida, R. (2002). The economic geography of talent. *Annals of the Association of American Geographers* 92(4): 743–755. doi:10.1111/1467-8306.00314.
- Gerolimeto, M. and Magrini, S. (2018). State of the art and future challenges of interregional migration empirical: Research in Europe. In: Biagi, B., Faggian, A., Rajbhandari, I., and Venhorst, V.A. (eds.). *New frontiers in interregional migration research*. Cham: Springer: 87–104. doi:10.1007/978-3-319-75886-2_5.
- Ginsburg, C., Bocquier, P., Béguy, D., Afolabi, S., Augusto, O., Derra, K., Odhiambo, F., Otiende, M., Soura, A., and Zabré, P. (2016). Human capital on the move: Education as a determinant of internal migration in selected INDEPTH surveillance populations in Africa. *Demographic Research* 34(30): 845–884. doi:10.4054/DemRes.2016.34.30.
- González-Leonardo, M. (2020). Migraciones internas, inmigración exterior y emigración de españoles hacia el extranjero: Un balance por nivel educativo. ¿Es España un país de baja movilidad? *Documents d'Anàlisi Geogràfica* 66(3): 591–627. doi:10.5565/rev/dag.596.
- González-Leonardo, M., López-Gay, A., and Esteve, A. (2022) Interregional migration of human capital in Spain. *Regional Studies, Regional Science* 9(1): 324–342. doi:10.1080/21681376.2022.2060131.
- Greenwood, M.J. (2014). *Migration and economic growth in the United States: National, regional, and metropolitan perspectives*. Cambridge: Academic Press.
- Gutiérrez-Portilla, M., Maza, A., and Hierro, M. (2018). Foreigners versus natives in Spain: Different migration patterns? Any changes in the aftermath of the crisis? *The Annals of Regional Science* 61(1): 139–159. doi:10.1007/s00168-018-0862-9.
- Hugo, G. (1975). Conducting research into population mobility in Java: The art of the possible. In: Pryor, R. (ed.). *The motivation of migration, studies in migration and urbanisation*. Canberra: Australian National University: 25–27.

- King, R. and Skeldon, R. (2010). Mind the gap! Integrating approaches to internal and international migration. *Journal of Ethnic and Migration Studies* 36(10): 1619–1646. doi:10.1080/1369183X.2010.489380.
- Laukova, D., Bernard, A., and Sigler, T. (2022). Settlement and migration patterns of immigrants by visa class in Australia. In: Kawano, M.A., Kourtit, K., Nijkamp, P., and Higano, Y. (eds.). *Theory and history in regional perspective*. New York: Springer: 165–191. doi:10.1007/978-981-16-6695-7_10.
- Laukova, D., Bernard, A., Nguyen, T., and Thomas, S. (2022). The role of visa class in the location choices of immigrants in Australia at the regional and neighbourhood scales. *Journal of Population Research* 39: 201–231. doi:10.1007/s12546-022-09280-w.
- Lee, E.S. (1966). A theory of migration. *Demography* 3(1): 47–57. doi:10.2307/2060063.
- Lee, R. (2011). The outlook for population growth. *Science* 333(6042): 569–573. doi:10.1126/science.1208859.
- López-Gay, A., Andújar-Llosa, A., and Salvati, L. (2020). Residential mobility, gentrification and neighborhood change in Spanish cities: A post-crisis perspective. *Spatial Demography* 8: 351–378. doi:10.1007/s40980-020-00069-0.
- Machin, S., Salvanes, K.G., and Pelkonen, P. (2012). Education and mobility. *Journal of the European Economic Association* 10(2): 417–450. doi:10.1111/j.1542-4774.2011.01048.x.
- Nogle, J.M. (1997). Internal migration patterns for US foreign-born, 1985–1990. *International Journal of Population Geography* 3(1): 1–13. doi:10.1002/(SICI)1099-1220(199703)3:1<1::AID-IJPG55>3.0.CO;2-L.
- Ravenstein, E.G. (1885). The laws of migration. *Journal of the Statistical Society of London* 48(2): 167–235. doi:10.2307/2979181.
- Raymer, J. and Baffour, B. (2018). *Subsequent migration of immigrants within Australia, 1981–2016*. New York: Springer. doi:10.1007/s11113-018-9482-4.
- Recaño, J. and De Miguel, V. (2012). The internal migration of foreign-born population in Southern Europe: Demographic patterns and individual determinants. In Finney, N. and Catney, G. (eds.). *Minority internal migration in Europe*. London: Ashgate: 239–262. doi:10.4324/9781315595528.

- Rees, P., Bell, M., Kupiszewski, M., Kupiszewska, D., Ueffing, P., Bernard, A., Charles-Edwards, E., and Stillwell, J. (2017). The impact of internal migration on population redistribution: An international comparison. *Population, Space and Place* 23(2036). doi:10.1002/psp.2036.
- Reher, D.S. and Silvestre, J. (2009). Internal migration patterns of foreign-born immigrants in a country of recent mass immigration: Evidence from new micro data for Spain. *International Migration Review* 43(4): 815–849. doi:10.1111/j.1747-7379.2009.00785.x.
- Rowe, F., Bell, M., Bernard, A., Charles-Edwards, E., and Ueffing, P. (2019). Impact of internal migration on population redistribution in Europe: Urbanisation, counterurbanisation or spatial equilibrium? *Comparative Population Studies* 44: 201–234. doi:10.12765/CPoS-2019-18.
- Rowe, F., Corcoran, J., and Bell, M. (2017). The returns to migration and human capital accumulation pathways: non-metropolitan youth in the school-to-work transition. *The Annals of Regional Science* 59(3): 819–845. doi:10.1007/s00168-016-0771-8.
- Sjaastad, L.A. (1962). The costs and returns of human migration. *The Journal of Political Economy* 70(5): 80–93. doi:10.1086/258726.
- Van Ham, M., Mulder, C.H., and Hooimeijer, P. (2001). Spatial flexibility in job mobility: Macrolevel opportunities and microlevel restrictions. *Environment and Planning A, Economy and Space* 33(5): 921–940. doi:10.1068/a33164.
- Zorlu, A. and Mulder, C.H. (2008). Initial and subsequent location choices of immigrants to the Netherlands. *Regional Studies* 42(2): 245–264. doi:10.1080/00343400601145210.