

The whether and where of graduate migration: Higher education graduates' mobility determinants and the role of higher education as a retention factor.

Diogo Ribeiro¹, Ricardo Biscaia^{1,2}

1 – CIPES – Centre for Research in Higher Education Policies

2 – CEF.UP – Center for Economics and Finance – University of Porto

Introduction

The spatial distribution of human capital is a central concern of regional science. Skilled workers are not evenly distributed across space and can cluster in ways that reinforce regional disparities. They tend to concentrate in metropolitan areas, while peripheral regions struggle to attract and retain graduate workers. As these workers are crucial for productivity growth and economic diversification, understanding the mechanisms behind their spatial distribution is essential for regional policy.

Graduate migration occupies a privileged position in this literature. Higher educated workers are more mobile than the general population, and especially so at the moment of labour market entry. As such, they can be consequential for regional economic development, potentially fuelling or counteracting existing patterns of human capital distribution.

Yet, despite some research interest, an important question remains underexplored: to what extent does Higher Education Institutions' (HEIs) location determine where a graduate ends up working? If HEIs location generates genuine retention effects — independently of regional wage premia and labour market thickness — then investment in peripheral HEIs may be an effective instrument for addressing spatial imbalances in human capital accumulation. Conversely, if the apparent retention effect of peripheral HEIs simply reflects pre-existing characteristics of their student bodies, the policy case is much weaker. Distinguishing between these two interpretations is a key empirical challenge. Therefore, this is a particularly urgent question for peripheral regions.

Our study seeks empirical evidence on the determinants of intranational graduate mobility, using comprehensive survey data on recent higher education graduates in Portugal. The Portuguese case is a compelling one to look at given the country's regional imbalances, with labour market opportunities are heavily concentrated in the two main metropolitan areas – Lisbon and Porto. This has even led to regional policy featuring as a concern of some importance in higher education policy, namely in the distribution of available study places across public HEIs.

Research Questions

We pose two related questions. First, which are more significant in determining a graduate's job location: individual or regional characteristics? Second, regarding the importance of a graduate's tie to their HEI: how much greater is the chance of a graduate becoming employed in the region where they studied?

Theoretical Background

Local social networks are known to be crucial for job search and matching (Cingano & Rosolia, 2012). Higher studies may enable graduates to form relationships with peers, academic staff and local employees and employers – place-based social capital, formed in a specific institution/region. In so far as this can provide them with locally specific knowledge, graduates may learn about local employers and sectoral opportunities during their studies in ways that are difficult to replicate from a distance. Drawing on Sjaastad's (1962) human capital framework of migration, this reduces the effective cost of job search in the study region relative to elsewhere, since informational barriers are lower. Additionally, other personal costs, such as place attachment or personal relationships formed, may also come into consideration and deter graduates from moving from their study region.

Crucially, however, these arguments can also be made to some extent for a graduate's tie with their origin region – where they went to school before university. For many, the two regions coincide, which can confound the relative importance of each. It may also be the case that the tie effects are not additive, such that graduates who have moved to attend university stand to gain from having significant knowledge of two regions, unlike their peers who stayed in place.

Literature Review

Empirical analysis of graduate mobility requires a methodological approach that is mindful of these theoretical considerations. In the existing literature, we find studies which are propitious to our research questions but that do not separately identify home and university tie effects within their discrete choice frameworks. Faggian and McCann (2009) study the determinants of graduate retention of UK universities, finding that results differ across types of institution and student characteristics; however, they model retention at an aggregate level (% of university graduates staying), rather than at the individual level. Venhorst et al., (2011) extend this approach to examine the determinants of graduate retention in Dutch regions by modelling at the individual decision level with a multinomial logit framework. Though rich in the number of variables considered, the origin region is not one of them.

Bjerke and Mellander (2017) are also of note by modelling location choice rather than regional retention, estimating choices of Swedish graduates with a multinomial logit. Still, their approach relies on outcomes being broad categories (home/urban/rural) and is mindful of origin tie effects but not study tie effects.

Data

The paper uses data from the EUROGRADUATE pilot survey, which is a survey shared between 16 countries of the European Education Area. This study uses the Portuguese version of the dataset, as made available by the Directorate-General of Statistics for Education and Science (DGEEC). The target audience of the survey were the graduates of the academic years of 2016/2017 and 2020/2021 for all Portuguese HE system (excluding PhDs), with the goal of capturing the situation 5 years and 1 year after graduation, respectively. Using a census perspective, the survey was disseminated in late 2022, and 18280 graduates were considered valid responses, corresponding to a coverage rate of 12,3% of the Portuguese system. This sample was considered representative of the country's graduates (Rodrigues et al., 2024). The final sample used in the paper is lower, as only employed graduates are considered. Additionally, at this preliminary stage, to ensure a more homogeneous set of labour market choices after graduation, only those graduated in 2020/2021 were considered.

The dataset provides a rich set of individual characteristics related to sociodemographic and educational experience, but also important location features, such as graduate residence and place of work at the time of the survey, HEI location, and location prior the entrance to HE. All of these are available at NUTS III level, allowing for a good understanding of mobility patterns and allowing for the disentangle of home and HEI effects to explain mobility-to-work movements.

Model Specification

Our methodology examines the *whether* and *where* of graduate migration through two separate models. The first model predicts whether a graduate remains in their study region after graduation. We estimate a binary logit where the utility of individual i staying at that region is:

$$u_i^{stay} = \alpha + \mathbf{X}_i \boldsymbol{\gamma} + \delta \text{NonLocal}_i + \mathbf{D}_i \boldsymbol{\lambda} + \varepsilon_i$$

where $\mathbf{X}_i$ is a vector of individual characteristics, NonLocal_i is a dummy indicating the graduate's origin region differs from their Higher education study region and $\mathbf{D}_i$ is a vector of region dummies capturing region-specific retention determinants.

The second model predicts where the graduate migrates to. We estimate a conditional logit in which each graduate faces a choice among all 25 NUTS III Portuguese regions. The utility of individual i working in region j is:

$$u_{ij} = \alpha_j + \beta_1 \text{Origin}_{ij} + \beta_2 \text{Study}_{ij} + \beta_3 \text{Both}_{ij} + \varepsilon_{ij}$$

where α_j denotes region fixed effects capturing region-specific attraction rates and the tie dummies are mutually exclusive categories: Origin_{ij} equals one if region j is the graduate's origin region but not their study region; Study_{ij} equal one if j is the study region but not the origin region; and Both_{ij} equals one if j is both. The reference category is regions with no tie to individual i . The mutually exclusive specification allows for the possibility of the tie effects not being additive.

Preliminary Results and Implications

Early results of our two-stage analysis yield a coherent set of findings. In the retention model, usually important individual characteristics, such as gender, age, or higher education performance are statistically insignificant, suggesting that graduate retention is a primarily geographic phenomenon rather than an individual one and motivating the location choice framework that follows. The region dummies, by contrast, are jointly highly significant, evidencing that where a graduate has studied matters independently of who they are.

In the location choice model, both origin and study ties exert a significant positive effect on the probability of working in a given region, even after controlling for the baseline attractiveness captured by the region fixed effect, although the origin tie is larger than the study tie. The combined effect of having both ties in the same region is less than the sum of the two individual effects, consistent with the two mechanisms being substitutes in anchoring graduates to a location: one strong tie appears sufficient, and a second tie to the same place adds relatively little at the margin, albeit both ties having a significantly larger effect than having just a single tie.

Together, these results suggest that university location generates genuine retention effects operating independently of regional labour market quality and individual mobility propensity. The action appears to be more in the geography – in the ties formed between people and places during study – and less in the observable characteristics of the graduates themselves. This finding, which is to be corroborated through further analysis and robustness checks, could have direct implications for the evaluation of place-based higher education investment as an instrument for regional development.

References

Bjerke, L., & Mellander, C. (2017). Moving home again? Never! The locational choices of graduates in Sweden. *The Annals of Regional Science*, 59(3), 707–729. <https://doi.org/10.1007/s00168-016-0777-2>

Cingano, F., & Rosolia, A. (2012). People I Know: Job Search and Social Networks. *Journal of Labor Economics*, 30(2), 291–332. <https://doi.org/10.1086/663357>

Faggian, A., & Mccann, P. (2009). Universities, Agglomerations and Graduate Human Capital Mobility. *Tijdschrift Voor Economische En Sociale Geografie*, 100(2), 210–223. <https://doi.org/10.1111/j.1467-9663.2009.00530.x>

Rodrigues, N., Oliveira, F., Biscaia, R., Silva, P., Rudakov, V., Inácio, A. (2024). Eurograduate 2022: Relatório Final. Available at <https://www.dgeec.medu.pt/api/ficheiros/65fb21c70c7bc47914575919>

Sjaastad, L. A. (1962). The Costs and Returns of Human Migration. *Journal of Political Economy*, 70(5), 80–93.

Venhorst, V., Van Dijk, J., & Van Wissen, L. (2011). An Analysis of Trends in Spatial Mobility of Dutch Graduates. *Spatial Economic Analysis*, 6(1), 57–82. <https://doi.org/10.1080/17421772.2010.540033>