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# Competition for talent. Country and organizational-level effects in the internationalization of European higher education institutions

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#### ABSTRACT

This paper analyzes the competition for skilled human resources between European higher education institutions (HEI) through a multi-level model predicting their ability to attract foreign researchers. Predictions of the model are tested on a dataset on internationalization of 601 HEIs in 8 European countries. We show that (1) the model is able to explain a large proportion of the variance in the levels of internationalization of academic staff between HEIs; (2) country factors are more important than HEIs' characteristics in driving internationalization; (3) research-oriented HEIs in attractive countries have a larger share of international staff, whereas this happens only to a limited extent with similar HEIs in low attractive countries; (4) the association of research orientation with internationalization is mediated by the HEI's international network.

These results have relevant implications for HEI's hiring strategies, as well as for national policies concerning careers and the mobility of researchers. We suggest that policies should be tailored to structural conditions of HEIs and countries, whereas imitating the approaches of highly attractive places might be damaging. Less-attractive countries should rather focus on training and career opportunities for young national researchers, as well as on instruments to keep linkages with national expatriates.

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#### 1. Introduction

The ability to attract skilled people is considered a central dimension of the competition between organizations, especially in knowledge-intensive sectors (Schultz, 1961; Grant, 1996). In the private sector, a number of studies investigate the antecedents of employee mobility, firms recruiting strategies (Marx et al., 2009), as well as the implications of employee mobility for organizational survival (Wezel, 2006), for diffusion of knowledge in the industry (Agrawal et al., 2006), and between public research organizations and companies (Almeida and Kogut, 1999; Breschi and Lissoni, 2009; Edler et al., 2011). While most studies focus on regional or national contexts, competition for skilled workers at the international level is becoming increasingly important (OECD, 2008; Freeman, 2010).

Competition for people is even more relevant to public research organizations as it can be argued that in public research competition between organizations mostly takes places through the acquisition of skilled researchers (Bozeman et al., 2001).

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http://dx.doi.org/10.1016/j.respol.2014.11.004 0048-7333/© 2014 Elsevier B.V. All rights reserved. Empirical studies also display associations between mobility and quality at the individual, organizational, and country level. Mobile researchers are on average more productive than nonmobile ones (Cruz-Castro and Sanz-Ménendez, 2010; Horta et al., 2010), while inside universities foreigners are more productive than nationals (Mamiseishvili and Rosser, 2010). At the organizational level, highly reputed universities display higher shares of academic staff from abroad (Horn et al., 2007; Horta, 2009). At national level there is evidence that foreign-born researchers contributes disproportionately to US science (Levin and Stephan, 1999).

The available data points to the increasing international mobility of academics (Ackers and Gill, 2008; MORE, 2010), as an outcome of changes in the academic profession (Welch, 1997; Enders and Musselin, 2008), as well as to international competition between universities for skilled researchers (Horta, 2009). Flows of researchers from Europe to the US (De Grip et al., 2010) raise concerns about the risks of brain drain and its negative implications for national research systems (Davenport, 2004).

In this context, the objective of this paper is to provide evidence on the factors accounting for the ability of Higher Education Institutions (HEI) to attract foreign academics. More specifically, we focus on the relative importance of the characteristics of the considered

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HEIs on the one hand and those of the hosting country on the other hand.

Indeed, surveys of academics show that their mobility decisions are largely driven by the reputation of host HEIs, the research resources available, and the match between the job position and their research interests (Agarwal and Ohyama, 2013; De Grip et al., 2010; Ivancheva and Gourova, 2011). At the same time, HEIs are embedded in national systems which are expected to influence the attractiveness toward researchers from abroad through factors well known in migration studies, including national wealth and wages (Ehrenberg and Smith, 2011), opportunities for highly-skilled workers (Borjas, 1987), regulations and structures of academic labor markets (Musselin, 2004; Enders and Musselin, 2008). To our knowledge, the relative importance of organizational and country factors in academic mobility has never been investigated, despite being critical in understanding international competition for skilled people.

In this respect, our paper offers three main contributions. First, by combining two complementary streams of literature-economics of migration on one hand (Borjas, 1987; Ehrenberg and Smith, 2011) and queuing theories of labor markets on the other (Reskin, 1991)-we develop a multi-level model to explain the ability of HEIs to attract foreign researchers, which includes country-level and HEI-specific factors.

Second, we test our predictions by exploiting a newly developed dataset on the internationalization of HEIs in a number of European countries (Lepori and Bonaccorsi, 2013). We demonstrate that (1) the model is able to explain a large portion of the variance in the share of foreign academic staff in our sample; (2) country factors are more important than HEIs' characteristics in driving internationalization; (3) research oriented HEIs in attractive countries display a high level of internationalization, whereas it remains comparatively limited for highly reputed HEIs in low attractive countries; (4) the association of research orientation with internationalization is mediated by the international network of the considered HEL

Third, we discuss implications for HEI's hiring strategies, as well as for national policies concerning careers and the mobility of researchers. We suggest that policies should be tailored to the specific conditions of HEIs and countries, whereas imitating the approaches of highly reputed places might be counterproductive. Less-attractive countries should focus on developing training and career opportunities for young national researchers (Heitor et al., 2014), as well as on instruments to keep linkages with expatriates, to increase return mobility (Baruffaldi and Landoni, 2012). At the organizational level, recruitment and human resource management strategies need to be tailored to the specific academic segment where HEIs are competitive.

#### 2. Theoretical framework

To analyze the international mobility of academics, we focus on two different processes: (1) the decision to move from one country to another and (2) the matching between applicants and jobs on the academic labor market (Becker, 1973). While most studies treat them separately, dealing first with determinants of international flows, and second with the fate of immigrants in domestic labor markets, the characteristics of the academic labor market require dealing with both processes simultaneously.

Determinants of migration decisions. Micro-economic models explain the decision to move as the outcome of a utility maximization process, where migrants compare the fixed costs of mobility with the (uncertain) opportunities offered by the hosting country's labor market (Massey et al., 1993; Ehrenberg and Smith, 2011), in relation to general macroeconomic conditions like the level of wages and employment rates (Todaro, 1969; Borjas, 1990; Arango, 2000; Todaro and Smith, 2011). Self-selection effects related to skills of potential migrants are important, especially when analyzing migration between rich countries (Borjas, 1987). Therefore, migrants generally do not constitute a random sample of the workers in their home country.

Economics of science supports the insight that scientists are highly rational in their career and mobility choices, maximizing their life-time utility (Agarwal and Ohyama, 2013; Stern, 2004), but subject to social norms of science where, especially for academic researchers in the public sector, non-pecuniary rewards like reputation and intellectual challenge are highly important (Stephan, 1996).

Surveys confirm that the most important factors influencing the migration decisions of academics are related to research, like the reputation of the HEI, the availability of financial resources (e.g. infrastructure, hiring of researchers), the match between one's own research interests and the profile of the position offered (De Grip et al., 2010; Ivancheva and Gourova, 2011); with economic factors like salary level coming second. Expectedly, studies of academic mobility show that international mobility tends to increase with the reputation of researchers, as the potential benefits are larger (van Bouwel, 2012).

Queuing models of labor markets. While microeconomic approaches assume that the matching between supply and demand of work takes place through changes in wage levels, queuing models build on the insight that labor markets are characterized by wage rigidity and permanent disequilibria; accordingly, in the hiring of workers, the match between people and jobs is considered to be the central process in determining the distribution of worker's groups between occupations (Sorensen and Kalleberg, 1981; Fernandez and Mors, 2008). These characteristics are shared by academic labor markets; where wages are almost fixed, there is a structural excess of labor supply, and micro-level matching between individuals' competences and job specifications are central to the hiring process (Agarwal and Ohyama, 2013).

Queuing models represent labor markets as a set of queues: employers rank the workers willing to fill a particular job in order of their preferences, while workers rank all jobs available to them. The matching process takes place as employers hire workers as high as possible in their labor queue, whereas workers accept a job as high as possible (Reskin, 1991). These models have been extensively adopted to explain segregation mechanisms (e.g. based on gender) between groups of workers (Petersen and Saporta, 2004).

A key insight of queuing approaches is that much of the segregation is generated at the early stages of the hiring process-when individuals decide whether to apply for a job and are sorted into different queues while progressing through the process (Fernandez and Mors, 2008; Fernandez-Mateo and King, 2011). These studies demonstrate that explicit employer preferences are not the main mechanism accounting for segregation and point to the role of social networks in reproducing the existing social structure of employees through job referrals (Fernandez and Fernandez-Mateo, 2006).

There is evidence of the importance of these mechanisms in academia, as the academic world is characterized by enduring social stratification and hierarchies both at the departmental (Weakliem et al., 2012) and university level (Webster, 1992). This translates into a phenomena of social closure and the emergence of systematic patterns in hiring, where core departments almost exclusively hire PhD graduates from other core departments, whereas peripheral departments tend to be colonized by the core ones (Han, 2003; Burris, 2004).

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