As the global competition for researchers and knowledge workers is intensifying, many countries try to find ways to become an attractive destination for the foreign ‘talent’. According to statistics, countries vary greatly in their ability to attract highly skilled researchers from abroad (see OECD 2008). Reasons why some countries succeed better are probably numerous and of various nature. Different surveys among researchers give us a rather consistent overview of factors that explain mobility decisions. Besides better employment opportunities and financial incentives, mobile researchers look for better research facilities, closeness to best researchers in the field, access to research funding, prestige of universities, and an extended professional network (e.g. Murakami 2009, Ivancheva and Gourova 2011, Nerdrum and Sarpebakken 2006). Additionally, institutional framework matters, such as transparency in recruiting and promotion procedures and researchers’ autonomy in the system (Pelizon 2002). In order to respond to these various expectations, many countries are transforming their institutional framework, personnel policies and financial instruments. Furthermore, the European Union has actively tried to create a ‘single academic labour market’ in Europe for more than a decade now. This is expected to be a labour market where researchers could be freely mobile and (re-)locate to where their potential can flourish the most. To what extent we are moving towards such an integrated labour market is still an issue to be monitored and studied.

This paper attempts to provide empirical evidence to understand the extent of mobility among top researchers in Europe. We use biographical information of the European Research Council (ERC) starting grant holders, presumably the very top of the European young scientists. Simple aggregated statistics presented by the ERC (2013) show some interesting differences in countries hosting the ERC grants and the country of origins of the grant holders. For example, there are many more grant holders of Italian nationality than grants held within Italian research institutions, confirming the much discussed issue of top Italian researchers working outside of Italy (Pelizon 2002). This paper was set up to model the mobility trajectories of the researchers and explain the ‘gravitational force’ of some countries for top talent. When the data was collected, the mobility of the top talent appeared to be rather limited in Europe. Instead of a highly dynamic traffic between different countries, which one might expect after the active implementation of the common European Higher
Education area, we see predominantly national research careers where only a few countries stand out as an exception. Therefore we will first take a step back and establish the evidence about the extent and nature of mobility as observed from the ERC starting grants holders and thereafter run a preliminary model to explain the mobility flows.

A discrepancy between the (wishful) thinking about the global talent market and rather national reality in Europe has been occasionally observed both by the representatives of the ‘talent’ trying to relocate as well as by researchers of the topic. Gareth Rice’s (2014) recent blog item, where he describes expressively his personal frustration with the discrepancy between the rhetoric of openness and the reality in the Finnish university system, received much publicity. Christine Musselin (2004) discusses thoughtfully - based on interviews with academics involved in recruitment - the bottlenecks in international recruiting, particularly in France and Germany. As we will see below, her observations from 10 years ago regarding very limited mobility within Europe may be very relevant to describe the current situation.

In the next section of the paper we will summarize the discussion about academic mobility in general and the attempts at the European level to encourage academic mobility. In the empirical analysis we will start with an exploratory look at the data which can give us some interesting insights about the academic labour market in Europe and then present the preliminary results of the mobility flows.

Background

Academic mobility

Academic mobility can take many forms: international, trans-national, cross-border or within national borders; it can be cross-sectoral and increasingly virtual; and short-term and long-term, temporary or permanent (Rindicate 2008). Academic mobility is usually seen as beneficial to research performance. Several studies demonstrate a positive relationship between research output and academic mobility (Horta et al 2010, Hoisl 2007). Some of the relationship can probably be explained by a ‘reverse causality’: more productive researchers may be more likely to be sought after by other institutions, they are more visible, and they themselves may be more motivated to search for other opportunities. However, mobility can also have an effect on productivity. Several mechanisms can explain the positive effect of mobility on performance (van Bouwel and Veugelers 2013). Mobility is likely to expose researchers to new ideas and methods that is likely to contribute to their work. Mobility also contributes significantly to spreading the ideas of the researchers, as shown by Azoulay et al (2010), whereby the contribution of the work becomes larger for the research community. Mobility may also help to create synergies with other researchers; and mobile researchers are shown to be more active collaborators. Furthermore, a wise mobility decision may create a better match between the researcher and his or her environment, thereby allowing the researcher to make a maximum use of his or her capabilities. Mobile researchers themselves tend to share the view that mobility is beneficial to their work – to their research output, professional network, and access to infrastructure (Idea consult 2010).

Academic mobility results from various considerations. A survey among European researchers shows that mobility is primarily driven by professional motivations: job satisfaction and research
environment are among the leading factors (Idea consult 2010). Nevertheless, practical considerations can have a serious effect both on encouraging the move or particularly on inhibiting the move. Well-known obstacles to mobility include among others career-related concerns (career stability and promotion system, pay differentials, availability of positions) and factors related to reallocation (accommodation, pension, personal relations). The obstacles to academic mobility have been examined thoroughly in Europe and addressing these issues in individual countries has been put strongly on the European agenda.

 Mobility and the European research policy

To gain from the benefits of academic mobility, the mobility of researchers has become an important policy goal in the agenda of the European research policy (Casey et al 2001). The European Research Area (EC 2000) since its inception has seen the increase in mobile researchers in Europe as one of its cornerstones. It also promoted the ‘introduction of the European dimension to scientific careers.’ The Mobility Strategy for the European Research Area, adopted in 2001, proposes a number of actions to create a more favorable environment for researchers in Europe. Specific actions aim at opening up the academic labor market. Documents such as the ‘Recommendation on the European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers’, the Researcher’s Mobility Portal, the European Network of Mobility Centres (ERA-MORE) and other information dissemination activities were implemented in the first years of the 2000s (COM 2005). The Kok report of 2004 (Kok 2004), reviewing the progress and challenges with implementing the Lisbon agenda, particularly emphasized the need to address administrative obstacles to mobility, including social security and recognition of qualifications – in order to retain and attract the talent in Europe. In the re-enforcement of the European Research Area in 2007 (COM 2007), an emphasis is put again on the importance of a more flexible and transparent European labour market for researchers which is beneficial for research, innovation and growth in general as well as to improve employment and working conditions for researchers in particular (COM, 2007a).

Researchers’ mobility was promoted also before the European Research Area. It has been an increasingly important part of the Framework Programmes since the FP3’s ‘Human Capital and Mobility’ Programme (1990-1994) which directly facilitates international mobility. In FP4 it received the well-known name of ‘Marie Curie’ actions’ and it developed to the ‘People programme’ in FP 7 (van de Sande et al 2004; Inzelt 2010). The People programme of the FP7 (incl. Marie Curie Actions) invests significant amount of money into career development, including the ‘open European labour market’, ‘circulation of researchers and their knowledge, both within Europe and in a global setting’, and to ‘make Europe more attractive to best researchers’ (CORDIS na). In order to achieve these goals, specific elements such as working and employment conditions and competitive salaries, career development allowances, a pan-European pension system, portable grants and a scholarship system within Europe receive attention (Inzelt 2010).

The importance of the topic at the EU level can also be seen from the multitude of studies funded by the EC that intend to document the extent of and the obstacles of international mobility. Among others this includes that FP6 Specific Support Action “Integrated Information System on European Researchers” (IISER), launched in 2007, with the purpose of creating an EU-wide system of indicators.
that captures researchers’ stocks, flows, career, and mobility events using existing sources of data, and a high level working group on improving mobility among researchers and the linked MORE reports (see EC 2001).

All in all, both in rhetoric as well in specific actions, the European Commission together with national policies is attempting to move towards an open and transparent European labour market for researchers. While European academics are becoming more mobile, there are also critical notes about the progress in this area.

The extent of mobility

International mobility has indeed become a characteristic of European researchers. International mobility is becoming increasingly an integral part of academic careers in Europe (Ackers and Gill 2008). The estimates of mobility are high. More than half (56%) of researchers in Europe, have been or currently are internationally mobile (i.e. at least 3 month abroad) (Idea consult 2010). Also national statistics confirm that the number of foreigners working in the science and technology sector is constantly increasing. A European Commission report (EC 2008:120-121) presents an average 8,6% annual growth over 2000-2006 period in the number of non-national but European citizens in the S&T workforce, ending in about 2-3% of the total workforce in the sector. The increase of non-national, non-European workforce in S&T sector has been even faster over the period (11,3%).

We can see increasing international mobility also among PhDs and post-docs. According to the RESCAR ERAWATCH (Robinson et al. 2007), about 7,3% of the PhD candidates in Europe were born in another EU member state and another 2,5% in a European but a non-EU country. The numbers for post-docs are somewhat higher, on average 13% and 4% respectively. We have quite good overview about the careers of the recent PhD holders (see e.g. Careers of doctorate-holders data collection (OECD/UNESCO/Eurostat 2010), while information about established researchers is more difficult to get hold of. Part of the mobility can be explained by specific European instruments. The EC is confident about the positive effect of ‘Marie Curie actions’ which facilitates mobility and training of researchers, and thereby makes ‘a valuable contribution to the development of the human capital of researchers’ (EC 2010).

Despite of the wide-spread mobility within and also outside of Europe, it is not clear to what extent we can talk about a European labour market for researchers. The Green Paper on the Future on the European Research Area (COM, 2007) recognizes the achievements but is still critical about the progress in achieving the true ‘single labor market’ where there are no practical or financial obstacles to mobility and where mobility is a part of a successful academic career. Musselin (2004) conducted a series of interviews with academics involved in recruitment in France and Germany and she concludes that academic labor markets are still highly national. She observes a number of factors that inhibit international recruitment. Instead of straightforward administrative and procedural obstacles, she identifies factors that come from subtle, rather specific differences within the higher education systems. One important element, for example, is the moment when young researchers may expect to receive a permanent (tenured) contract. While in France this happens early (the age of 33), in Germany it used to be a longer road (age of 42) (but is now reformed significantly). Such differences between countries make an international hiring more difficult.
Systems also differ with respect to whether researchers are supposed to leave the home university for promotion (e.g. Germany) or it is common to stay in the same university (Norway). There are implicit factors that recruitment committees face when choosing a candidate – sufficient competence area from broad teaching responsibilities, certainty about the competence area, language etc. As a result, Musselin finds that departments rarely hire a ‘spontaneous’ foreign applicant. Successful foreign candidates have lived in the country longer and are familiar to informal rules. The other group is the ‘stars’ whose reputation is known to the committee and who as a rule do not apply spontaneously.

RESCAR study confirms such differences between countries, pointing that post-docs from Germany, Spain and the UK get permanent posts faster, whereas French, Italian and Portuguese post-docs take longer to get permanent posts (Robinson et al., 2007:77-78). Findings from the RESCAR study show also interesting differences in the career prospects for national and foreign researchers, confirming that the career trajectory seems to be faster in the country of origin. The study observes that researchers who obtain their doctoral degree in their country of origin, are more likely to obtain permanent employment soon after their degree. Foreign candidates who remain in the country where they obtain their PhD have also a slightly better chance to obtain permanent employment soon after their degree.

The evaluation of the Marie Curie program (Sande et al 2005) gives information about the career moves of the fellows. According to this study, 56% of respondents had returned to their home country after four years of the end of the fellowship (led by Spain, French, Germans and Italians; and UK/Ireland and South East Europe in the low end). Around a third of fellows returned to their previous institution and a quarter to another institutions at home.

Also other studies show that ‘mobile’ academics generally prefer careers at home and use their international mobility to further their national careers (see Musselin 2004). In some disciplines particularly (biology, chemistry), a post-doc period is a prerequisite for an academic job. Candidates see it primarily as a stepping stone for their national careers. While the international post-doc is seen as a temporary post with future uncertainty, the candidates try to remain in contact with their home institution for their future career purposes.

There are thus different triggers in place for researchers that push them abroad as well as pull them to their home country. In addition to home network, many countries have policy instruments in place to attract both foreign talent but also to facilitate return of their own talent. Distribution of researchers between home institutions and abroad is thus a result of many different incentives. In this paper we will have a closer look at one type of researchers, the ERC starting grant winners, who could be called the ‘top talent’ in Europe. It is an interesting group because arguably this should be the most mobile group of researchers. The ‘top talent’ is most sought after with various national policy instruments. They are probably also more eager for (international) collaboration (see e.g. the paper on Nobel price winners by Zuckerman 1967) and perhaps more driven to seek the most fruitful research environment. Furthermore, the paper is limited to a special group in ERC grant holders – starting grant holders in life sciences. We know from existing studies that researchers in their earlier years are more mobile and also researchers in life sciences are most mobile (compared to social sciences and humanities, for example) (Idea consult et al 2008). This group is thus potentially highly
mobile and gives us insights to model different competitive forces in European higher education system. Inzelt (2010) in her overview of the European mobility programs suggests implicitly that the ERC grants could be potentially a way to mobilize top researchers in the best research environments available in Europe, showing the concentration of grants in some top research institutions (CNRS in France, as well as Cambridge, Oxford, Lausanne and Max Planck Institutes). Referring to the self-assessment study of the programs, she mentions structural impact of the ERC grants: “a number of institutions try to make them more attractive to become an important location – meeting place – for ERC Grantees. These universities and research institutions are encouraging ERC Grantees to choose their institutions as host environment.”

An ability to attract international top researchers in a country is thus a result of many different factors. Well-known factors such as resources (funding and infrastructure) and reputation (system-wide or clearly identifiable centers of excellences within the system) are likely to play a role. Similarly the openness and transparency of the system contributes, as for example measured by international advertisement of available positions. Language, geographical and cultural closeness may also explain some mobility. These factors may help to pull a researcher to another country. Particularly in the group of the young and ambitious researchers we can expect that they search for a location where they can maximize their potential. Personal factors matter as well (salary, social security, personal relations) and may function as an attraction or an obstacle, but based on different surveys, international mobility decisions are rather linked to professional matters (job satisfaction, career opportunities). While being mobile may be beneficial if it is an opportunity to improve the resource base for one’s research, to extend collaboration and network, it may also come at the cost of slower career path, of weaker local network and information about opportunities, and uncertainties related to the move. Both the ability to improve career prospects as well as potential costs of the move probably vary from country to country.

Data

We use the biographical data from all ERC Starting Grant holders from the 2013 round in the field of life sciences, as listed on the ERC website1. Data on each grant recipient is collected through internet search and the information is usually found either on the website of the appropriate university or research group, and/or via secondary sources such as Researchgate or LinkedIn. The dataset includes information on the institution of the undergraduate/master degree, PhD degree, post-doc position(s), and other academic positions. The dataset also includes the category of origin, attempting to identify where the person originally comes from. In case of ambiguity, we assume that the country of the undergraduate degree is the country of origin. Sometimes a person has come to another country for his or her first degree but we can identify the country of origin, in some cases we cannot find information about the origins, or we cannot easily categorize the origin (e.g. a person leaving USSR in the age of 11). Regardless of the weaknesses and potentially a few mistakes due to ‘complicated’ origins, the data should be sufficiently reliable for our exploratory analysis.

The ERC starting grants in Life Sciences were in 2013 issued to 108 researchers in 17 countries. Israel is included in the ERC but we omit Israel in this study because the Israeli grant holders seem to be rather exceptional in their career paths and Israel is no the target of the EU single academic labour market policy. Other than that, we have omitted six grant holders - from different countries –

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since we are not able to find enough data. In total we have thus information about 87 grant holders from 16 countries.

ERC starting grants are competitive grants, awarded to researchers of any nationality as long as the research is conducted in a EU member state or in an associated country. The grant is meant for researchers in the beginning of their career: 2-7 years of experience after PhD. The maximum amount of the grant is 1,5 million Euros for up to 5 years. The selection is entirely merit based, considering the quality of the proposal and the track record of the applicant. The success rate is about 9 per cent (ERC 2013).

Results

Descriptive and exploratory results

From the qualitative data appear certain commonalities among all ERC grant holders. First of all, career patterns in the life sciences are rather homogenous. Virtually all people have held a few-year post-doc period abroad, which often is preceded by a short transitory post-doc at the PhD institution. With overwhelming majority the grant holders from all countries have had a post-doc period in a US university or research institution. About half of the researchers have had a post-doc period in the US (42 people). Many of the post-docs are funded with national or European (Marie Curie) funds, which is several cases leads to an extended post-doc with the US funding. The UK is another popular destination for a post-doctoral fellowship, with 12 researchers (excluding the people who stayed for a short post-doc in their PhD institution) from which 10 came from abroad. Only two countries can offer some balance to the Anglo-American domination in post-doctoral fellowships: Germany (particularly Max Planck Institute) and Switzerland (primarily Zurich). Seven researchers moved to Germany for their post-doc, with additionally two researchers who were already placed in Germany. Switzerland attracted seven researchers, overwhelmingly of German origins. Among the remaining researchers we can see a post-doc in France or Netherlands, a local post-doc, or no post-doc. All in all, virtually everybody has a significant work experience abroad, either moving for their PhD, a post-doc fellowship or the final position. We can identify only two people who do not seem to have any significant international exposure, both coincidentally in the Netherlands.

While virtually all candidates have a significant working experience abroad, the grant recipients predominantly work in their home country (Table 1). There are some exceptions to this rule though. All in all, more than one third of grant holders in our categorization are of foreign origin – 33 out of 89. Two countries in particular stand out: Austria and Switzerland rely heavily on foreign researchers. About half of the researchers in these countries come from the neighboring Germany. The UK has also a high number and a relatively high proportion of foreigners. Excluding the three countries, the proportion of foreign grant holders drops to below 20%.

When we look at the foreign researchers, it is striking that very few of them have a PhD from the country of residence. The large group of recipients is thus researchers originally from the country, also with the PhD degree from the home country. Foreigners, on the contrary, either have a PhD from their home country of origin (Germans in particular but also US and Australia) or from a ‘third’ country (most others). There seems to be only one exception where a foreign grant holder has the
PhD from the country of residence. The idea of attracting the top talent at the PhD phase does not seem to be supported within this group. Either European universities do not succeed in attracting the foreign top talent for the PhD program or they do not manage to keep the talent very well after the researchers have completed their degree.

Neither are the future ERC grant holders attracted to the country with a post-doc fellowship. It is not always clear in data what can be considered as a post-doc positions and what is moving forward to another type of a position. However, the career trajectories are rather homogenous in this discipline and most candidates have one major post-doc abroad after their PhD. We can then look if this post-doc has attracted them to the current country of residence. Only in very few cases the post-doc location remains the location of the ERC grant. This confirms the point above that post-doc at least in this field is indeed a preparatory stage on the career path to make a major step thereafter, instead of a transition to a more permanent career path.

The European research system is sometimes blamed for an inward look and lack of transparency where staff is hired amongst the PhD graduates of the very same institution. We will have a closer look at the data to determine whether the top researchers tend to stay in their own PhD institution, as suggested above, which may significantly reduce the attractiveness of international mobility. On technical reasons these links are not always easy to detect. Particularly in the Napoleonic model of higher education where universities and research institutions are formally separated (e.g. in France and Germany) it is not possible to identify the extent to which a PhD granting university is de facto linked with a research institute. In a few cases where we have a reason to believe that a research institution is strongly linked to the university, we still count as the researcher stays in the PhD organization. Austria and Switzerland were two interesting countries with many internationals. Here we can also see that the link between the PhD institution and the host institution is non-existent or very weak. In the Belgian, on the other hand, three out of four grantees stay in the same university, and the one remaining is the only non-Belgian researcher. Also in Italy the ties between the PhD institution and subsequent post seem to be very strong. In Germany, France and Spain the connections are more difficult to identify due to separation of universities and research organizations – such as the Max Planck Institute or CNRS, respectively. Yet, in all cases direct links do not seem to be dominant. The numbers in the sample are too small to make strong claims about country level differences. In most countries there is no strong formal link between the PhD granting institution and current position; to what extent there are informal links from the move from university to the research center is more difficult to establish. Based on the data we have, we can conclude that the top researchers are mobile also within their country of origin.

We can thus see that in broad lines there are two types of researchers: national researchers with some intermediary international (post-doc) experience and international group of researchers with multiple country experiences. German researchers are an exception to this rule and are able to establish themselves in another country without further international experience. Furthermore, it seems that the UK and Switzerland are able to attract top post-docs that would stay in the country to secure ERC grants in the future. Switzerland stands out also in another respect. Not only it seems very open to incoming researchers, it seems to be able to hire also top post-docs. Switzerland and the UK, with Germany seem to be the only two countries that offer a balance to the US dominance for a post-doctoral fellowship.
Table 1. Distribution of ERC starting grants by host country

<table>
<thead>
<tr>
<th></th>
<th>Grants</th>
<th>Gran holders not originating from the country</th>
<th>PHD from the same (or strongly affiliated) institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Belgium</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>13 (+1)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>11 (+1)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Hungary</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Italy</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Norway</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Portugal</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Spain</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sweden</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7 (+1)</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Turkey</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>UK (Israel)</td>
<td>16 (+2)</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

(+1) one person omitted due to insufficient data

Towards modeling international attractiveness of countries

Mobility flows between countries are often conceptualized in two closely related models. The gravity model, used to explain migration and international trade flows, conceptualizes a flow between two countries as a function of the ‘mass’ of the two countries and the distance between the countries. The mass is usually seen as the size of the country. This model can be also further augmented with the characteristics of the home and the host country. The other angle to the same model in migration research is the push and pull model (originally conceptualized by E.S.Lee). In this model migration is a result of pull factors in the host country that attract people and the push factors that are characteristics of the home country pushing people to leave. It is similar to the gravity model which in its reduced form is an equation derived from demand and supply relationships (Karemera et al 2000). Factors such as host country size, income and other characteristics represent the ‘demand’ for immigration. And size, income and other factors of the country of origin reflect the ‘supply’ of immigration.

An appropriate model specification for gravity models (particularly in international trade) has been recently open to discussion due to technical problems that the traditional log-normal specification revealed. Most importantly, the tradition model suffers from frequent zero values in the data (i.e. lack of flow between many country combinations), heteroscedasticity, and potential bias created by the log transformation (see Burger et al 2009). As a result, suggestions for a better model specification include a form of a Poisson regression or a Tobit model (Santos Silva and Tenreyro...
In the analysis below we will present the results of a simple Poisson regression model (not zero-inflated).

In our models we will look at the following country characteristics for both the host country and the country of origin:

- Size of the ‘population’, where we look at the number of doctoral degrees issued
- R&D funding, i.e. money spent on the R&D sector (controlled for the size of the country).
- Reputation, where we look at the number of universities in the top 50 in the Shanghai rankings.
- International openness of the academic labour market, as measured by the number of positions advertised on the Euraxess-Jobs website \(^2\) (controlled for the size of the country).
- Language affiliation – (a) if the host country shares the language or (b) if it is an English speaking country.

All the explanatory variables other than the language and reputation are on the logarithmic scale. The first three variables are obtained from the Eurostat database for the year 2013.

We first examine the factors that determine the in-flow of foreign top talent by using an OLS model. As shown in Table 2, the quality or the reputation of the system is the major determinant of the inflow. The size of the research system matters as well. The measure of the openness demonstrates an expected direction even though not passing the critical threshold of statistical significance. Considering the smallness of the sample, the result is inspiring for further attention. The economic development of the country and money in the system according to these results demonstrate no influence.

Table 2. Predictors of foreign talent in-flow to countries

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Unstand. coeff</th>
<th>Std.error</th>
<th>Standardized coefficient</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation</td>
<td>1,296</td>
<td>,383</td>
<td>.707</td>
<td>,007</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>.000033</td>
<td>.000</td>
<td>.236</td>
<td>,640</td>
</tr>
<tr>
<td>R&amp;D funding</td>
<td>.006</td>
<td>.009</td>
<td>-.369</td>
<td>.506</td>
</tr>
<tr>
<td>Size of the system</td>
<td>.000</td>
<td>.000</td>
<td>.392</td>
<td>.096</td>
</tr>
<tr>
<td>Openness</td>
<td>400</td>
<td>267</td>
<td>.464</td>
<td>.165</td>
</tr>
<tr>
<td>Constant</td>
<td>-.415</td>
<td>.969</td>
<td>.678</td>
<td></td>
</tr>
</tbody>
</table>

Adj. R-square: 0,609

\(^2\) http://ec.europa.eu/euraxess/index.cfm/jobs/statisticsFO
Table 3. Predictors of researchers’ flows from the country of origin to the host country

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Std. err</td>
<td>Sign.</td>
</tr>
<tr>
<td><strong>Btw countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common language</td>
<td>2.403</td>
<td>0.6163</td>
<td>0.000</td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Host country</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reputation</td>
<td>0.370</td>
<td>0.1609</td>
<td>0.022</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.082</td>
<td>1.4082</td>
<td>0.953</td>
</tr>
<tr>
<td>R&amp;D funding</td>
<td>0.281</td>
<td>0.8728</td>
<td>0.747</td>
</tr>
<tr>
<td>Size of the system</td>
<td>1.315</td>
<td>0.8244</td>
<td>0.111</td>
</tr>
<tr>
<td>Openness</td>
<td>1.277</td>
<td>0.9207</td>
<td>0.166</td>
</tr>
<tr>
<td><strong>Home country</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>characteristics</td>
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<td>Reputation</td>
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<td>GDP per capita</td>
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<td>R&amp;D funding</td>
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<tr>
<td>Size of the system</td>
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<td>Openness</td>
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<tr>
<td>Log-likelihood</td>
<td>23,797</td>
<td>30,558</td>
<td>49,725</td>
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</table>

When we turn to researchers’ flows between countries (Table 3), the initial insights tend to get confirmed. We start the baseline model where we confirm the relevance of the top quality in the country. Additionally it is clear that shared language is an important explanatory variable. Shared language can be of course an indication of more than just a direct language barrier, reflecting also broader cultural and historic ties. In any case a shared language space facilitates mobility.

Adding host country characteristics helps us to explain the flows further. Expectedly, the size of the higher education system matters, but available funding in the research system and general economic prosperity of the country have no influence. Although we use quite a crude measure for openness, it again shows a result in an expected direction and although it does not just pass a critical threshold, it is not likely to be due to random error. Countries with more open recruiting system seem to be more successful in attracting foreign top talent.

The effect of the characteristics of the country of origin are more difficult to pinpoint. The relationships can also be multidimensional. For example, researchers from a less advantaged research environment may be strongly attracted by a good research environment, but coming for a lower quality system may also reduce the chances of developing the potential to become an ERC grant holder. The same may be true about the appropriate funding to research in the home country.
The coefficients for the reputation or funding may therefore combine such mixed signals. Considering these ambiguities it is interesting that the openness of the system again demonstrates an expected effect, albeit not quite significant. Closed systems indeed seem to push their top researchers away.

**Conclusion and Discussion**

The mobility of researchers within Europe has received much attention in recent years. In this paper we concentrated on the ‘top talent’ in Europe, as identified through the ERC starting grants. We limited the empirical analysis on the discipline of life sciences. It is important to recognize that in life science researchers tend to be most mobile and the results may have an ‘upward bias’ when extended to other sectors. The top young researchers in Europe have clearly international exposure, particularly in their post-doctoral phase. After the post-doc, researchers rather tend to stay in their home countries (or perhaps not in Europe). Nevertheless, we can see a meaningful proportion of non-national grant holders in Europe, originating both from Europe as well as outside of Europe. The preliminary and small scale data we have used in this paper confirms that the quality of research in the specific country has the major effect on the ability to attract foreign talent. We also get some confirmation that openness of the system in recruitment may have a noticeable effect. Furthermore, the openness of the system is equally important in the home country. It seems that top researchers are not only attracted with an open recruitment system but they are also pushed away by a closed system at home.

The importance of the recruitment system at home is further supported by the fact the top researchers are highly mobile between institutions. Unlike some suspect about academic labor markets in European countries, ERC grant holders are rather in exceptional cases hired by the same institution where their PhD degree was issued. This means that the group is mobile to start with and the openness at home and abroad is thus a particularly important factor.

Another interesting point about mobile top researchers is their entrance to the host country. While much attention is paid on attracting the best PhD students or even post-docs, it is quite clear in this group that these are not common entrance routes to the final country of residence. In virtually all cases the foreign researchers have entered the country after the PhD and after the post-doc. It may be that the group that is mobile in the earlier stages is also more difficult to be retained. But from other studies we also know that the career in the early stage may actually be slower for foreign researchers, which may reduce their chance to be ready for the ERC grant.

Considering the efforts made towards the European academic labour market, it is intriguing why the mobility is rather low. One of the points of criticism raised is that countries in Europe pay a lot of attention to mobility and attracting international researchers, but the attention is more to quantity than to quality. Countries are seeking to attract a lot of well-educated, highly skilled people, but the focus is not on the very best. According to Itzkel (2010), only a few programs focus directly on finding the best and most appropriate researchers by the program screening. It seems that openness of the countries has something to do with this as well, but interestingly making a country open seems to not only increase mobility for foreign researchers but also ability to retain the best from the country.
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